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WAYNE D. RASMUSSEN
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AGRICULTURAL HISTORY

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Agricultural History is designed as a medium for the publication of research and documents pertaining to the history of agriculture in all its phases and as a clearinghouse for information of interest and value to workers in the field. Materials on the history of agriculture in all countries are included, and also materials on institutions, organizations, and sciences which have been factors in agricultural development. The Society is not responsible for the statements or opinions of contributors.

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Everett E. Edwards, 1900-1952

It is my sad duty to announce the recent death of Everett E. Edwards, who for so many years has been the directive force in maintaining the high standards of the Agricultural History Society. All of us know and appreciate his fine editorial direction of the journal, his contributions in the field of bibliography and agricultural history, and his capacity for friendship. A more complete account of Mr. Edwards' career, written by Herbert A. Kellar, will appear in the near future.

Lewis E. Atherton, President
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THE HISTORY OF THE COMMON MAIZE VARIETIES OF THE UNITED STATES CORN BELT

EDGAR ANDERSON

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AND

WILLIAM L. BROWN

Pioneer Hi-Bred Corn Company

The golden yellow maize in the corn belt of the United States, the long cylindrical ear which has become the very foundation of the Nation's agricultural economy, is frequently said to be the gift of the American Indian. As we shall show below, this characteristic type of maize was not known to the Indians and came into being along with the corn belt itself during the nineteenth century. One could much more accurately say that maize as we know it in the United States is the gift of the pioneers.

The common yellow dents which dominated the chief maize production centers for fully a half century before hybrid corn appeared on the scene were variable to an extent which can scarcely be appreciated by those who have not studied such fields. They differed from plant to plant in the same field, from field to field of the same variety, and from variety to variety. Yet in spite of this variation they had a conspicuous core of generally prevalent characters. Compared with maize in other parts of the world they were a well-marked and very definite entity. They tended to have one well-developed ear, with a nubbin or small ear at the node below it. The ears had large and nearly cylindrical red cobs. The golden yellow kernels, pronouncedly dented at the tip, were set in from 14 to 22 straight rows. The whole ear had a slight tendency to taper toward the apex and for the rowing of the kernels and the diameter of the cob to be somewhat differentiated in its lowermost quarter. The plant itself had a single stem, leaves with tight sheaths, and strong arching blades, and a heavy many-branched tassel. A flush of epidermal color was apparent on the culm and leaves at the base of the plant, but seldom or never were there to be found the brilliant foliage colors so characteristic of maize in Latin America.

There cannot be the slightest doubt that these corn-belt varieties were the creation of the nineteenth century. They came in large part from crosses between white southern dents, mostly of Mexican origin, and the long, slender northern flints which had dominated the eastern United States for at least some hundreds of years preceding the discovery of America. These flints are strikingly similar to the common yellow flints of the Guatemalan highlands, strikingly unlike most Mexican maize, and are one of several cultural traits which apparently spread from the Mayan area to the eastern United States without leaving any clear record of the route by which they came. The northern flints were very different from the southern dents, and the hybrid vigor which resulted from mixing these diverse types was soon noted by alert agriculturists. While some of the blending of flints and dents may have been haphazard or accidental, much of it was directed and purposeful. The benefits to be gained were listed and the exact effects of continued mixing and of backcrossing were discussed as early as 1813.[1] This intelligent controlled hybridizing proceeded until the new yellow dents were so ubiquitous that their very origin was largely forgotten. This neglect of historical tradition was unfortunate. Most maize breeders have not understood that the hybrid vigor they now capitalize is largely the dispersed heterosis of the flint-dent mongrels. Maize geneticists are for the most part unaware that the germ plasm they use for fundamental studies is grossly atypical of germ plasms in general.

These distinctive wide-kerneled, long-eared varieties of northern flints (with which should be

[1] John Lorain, "Observations on Indian Corn and Potatoes," Philadelphia Society for Promoting Agriculture, *Memoirs*, 3: 308–310 (Philadelphia, 1814).

associated the related flour corns of the eastern Indians since they differ from them by but a single gene) were for centuries the prevailing type in eastern North America. We have already reported on a survey of all the readily available archaeological material.[2] For most of the States east of the Mississippi the northern flints represent the only type that is known archaeologically and the only one represented in collections made among the eastern Indians. With the additional records which have come to hand since our earlier report,[3] they are known archaeologically from over twenty-five sites from Massachusetts to Texas and from South Dakota and Michigan to Alabama and Georgia. A collection of sacred flour corns of the New York State Indians presented to us by Frank P. Bussell are all of this type as are varieties we ourselves collected among the Sac and Fox Indians of the Tama (Iowa) Reservation and from the Cherokee remnant in North Carolina.[4] The varieties illustrated by F. W. Waugh for the Iroquois of Canada and by Arthur C. Parker for the Iroquois of New York State are nearly all of this type.[5] A special collection made for us by Father Brinker on the Menominee Reservation in Wisconsin is all of this type.

The only exceptions to the prevalence of northern flints in the eastern United States are in Illinois, Missouri, Ohio, and Arkansas where remains of varieties resembling those of the Great Plains and the American Southwest have been discovered. In the Southwest, corn has had a long and complicated history with a succession of types which is now fairly well understood.[6] On the Great Plains, maize has had an equally complicated career with northern flints, Mexican-like dent corns, and mixtures resembling Puebloan varieties all being found in close proximity to one another but usually at different sites. Not until this large area has been much more carefully studied and the sequences and relationships of its various cultures at least approximately determined will it be possible to say anything very definite about the history of maize in the Great Plains. As to the northern flints we know that they were important there, particularly in the north, and that intermediates between them and Great Plains types are found in the central Mississippi Valley.

All the early travelers to the eastern United States, if they mention maize at all, described northern flint varieties. Jonathan Carver, for instance, who traveled from the Atlantic coast to the western end of Lake Superior, described the maize of the Indians as having "seeds as large as pease, and like them quite naked and smooth, but of a roundish surface, rather compressed. One spike generally consists of about six hundred grains, which are placed closely together in rows to the number of eight or ten, and sometimes twelve."[7]

John Lorain of Pennsylvania listed five types of maize which were being grown in the middle and southern Atlantic States in the early 1800s.[8] Four of these were northern flints, "the big white and yellow," and "the little white and yellow." These he described as follows:

> The cobs of the two first mentioned are thick and long, the grains are much wider than deep, and where the rows of grains meet and unite with each other, their sides fall off almost to nothing. . . . As the little white and the little yellow are formed much in the same way, and the cobs [are] considerably smaller, they are still less productive than the big white and yellow, but ripen earlier. The grain of those four flinty corns are very firm, and without indenture in their outside ends.

If the northern flints probably came from Guatemala, the southern dents even more certainly stemmed from Mexico. An ear of the variety Hickory King can scarcely be distinguished from the narrow-ear varieties of western Mexico. Shoepeg is very similar to the widespread Mexican variety Pepitillo, and gourdseed closely resembles many

[2] William L. Brown and Edgar Anderson, "The Northern Flint Corns," Missouri Botanical Garden, *Annals*, 34: 1–29 (1947).

[3] Volney H. Jones, "Maize from the Davis Site: Its Nature and Interpretation," Society of American Archaeology, *Memoirs*, 5: 241–249 (1949).

[4] Edgar Anderson and William L. Brown, "The Origin of Corn Belt Maize and Its Significance in Heterosis," *Heterosis* (Ames, Ia., 1952), ed. John W. Gowen, chapter 8.

[5] F. W. Waugh, *Iroquois Foods and Food Preparation* (Canada Department of Mines, Geological Survey, *Memoir 86*, Ottawa, 1916); and Arthur C. Parker, *Iroquois Uses of Maize and Other Food Plants* (New York State Museum, *Bulletin 144*, Albany, 1910).

[6] George F. Carter and Edgar Anderson, "A Preliminary Survey of Maize in the Southwestern United States," Missouri Botanical Garden, *Annals*, 32: 297–322 (1945).

[7] Jonathan Carver, *Three Years Travels Through the Interior Parts of North-America* (Philadelphia, 1796), 346–347.

[8] John Lorain, *Nature and Reason Harmonized in the Practice of Husbandry* (Philadelphia, 1829), 203.

of the large-eared, soft-kerneled, many-rowed dents which seem to trace back to crosses between Mexican Pyramidal types and Zapaluta Chica from Oaxaca. Whatever their origin, there is as yet no archaeological evidence for any of these types within the boundaries of the United States. Dent corns are found prehistorically on the Great Plains and in the southwest, but they are different types of corn and only remotely related to these southern dents.

Apparently the oldest reference to the southern dent corns is in Robert Beverly's history of Virginia, written in 1705. He described "a larger grain and looks shriveled with a dent on the back of the grain as if it had never come to perfection; and this they call She corn."[9]

Our second earliest account is from the *Memoirs* of Dumont, published in Paris in 1753. He described the two main kinds of maize in Louisiana.[10]

> On distingue deux sortes de mahi, dont l'un est propre a faire de la farine & l'autre non: ce dernier a le grain tout rond; l'auture l'a un peu plus plat, & se distingue par une espece de coup d'ongle ou de rainure que regne sur toute a longueur des grains.

The claw point or groove serves to distinguish the southern dents which are still to be found in that region. It would not, however, distinguish between any of the various rough dents as, for instance, the gourdseed and the shoepeg.

One or two fleeting references in the recently published notebooks of Charles Read are of interest because in them we find the term dent corn used for the first time. His reference to the long kernel is also suggestive. In January 1756, he entered in his notebook the weights per bushel of various kinds of corn in New Jersey and Pennsylvania. Two of the entries could not possibly refer to flint corn: "Egg harb[o]r dented yellow 57 lb. . . . The Long grained Lower Co Corn clean 53."[11]

It is not until we come to the works of John Lorain that we have a really definite description of a southern dent. In 1813 he contributed a paper on the effect of crossing dent and flint corns which was published in the *Memoirs* of the Philadelphia Society for Promoting Agriculture.[12] In 1825 his widow published his much more extensive treatise on agriculture, entitled *Nature and Reason Harmonized in the Practice of Husbandry*. It includes his earlier observations and has an even more extended discussion of maize and maize breeding.[13]

Lorain distinguished five kinds of maize used for field planting, one of which is the Virginia Gourdseed. His description of the ears of this corn reads:

> The ears of the Virginia gourdseed are not very long, neither is the cob so thick as that of the big white and yellow. But the formation of the grain makes the ear very thick. They frequently produce from thirty to thirty-two, and sometimes thirty-six rows of very long narrow grains of a soft open texture. These grains are almost flat, at their outside ends, are also compactly united from the cob to the surface of the ear, without any of that fluted appearance between the rows of grain, which causes the flinty corns to be much less productive in proportion to the size of the ears.
>
> The gourdseed corn ripens later than any other, but it is by far the most productive. It is invariably white, unless it has been mixed with the yellow flinty corns. Then it is called the yellow gourdseed, and too many farmers consider it and most other mixtures original corns. I have often heard of original yellow gourdseed corn, but after taking much trouble to investigate the fact, could never find any thing more than a mixture. If there be an original yellow gourdseed corn, it has eluded my very attentive inquiry from the Atlantic to our most remote western settlements.[14]

In 1837 and 1838 appeared the text of a lecture on maize given by Peter A. Browne before the Cabinet of Natural Science of Chester County, Pennsylvania, at which he exhibited specimens from his collection of maize varieties.[15] He referred to a yellow corn as "the genuine gourd seed," though probably as suggested by Lorain and others these yellow gourdseeds all came from mixtures of white gourdseed and yellow flint. He described it as

> The genuine gourd seed Indian corn, so called from the supposed similitude in shape, between its grains

[9] Robert Beverly, *The History and Present State of Virginia* (London, 1705), pt. 2, p. 30.

[10] Dumont de Montigny, *Memoires historiques sur la Louisiane* . . . (Paris, 1753), 32–34.

[11] Carl Raymond Woodward, *Ploughs and Politicks: Charles Read of New Jersey and His Notes on Agriculture, 1715–1774* (New Brunswick, N. J., 1941), 286.

[12] Lorain, "Observations on Indian Corn and Potatoes," Philadelphia Society for Promoting Agriculture, *Memoirs*, 3: 303–325.

[13] Lorain, *Nature and Reason Harmonized in the Practice of Husbandry*, 201–229.

[14] *Ibid.*, 203.

[15] Peter A. Browne, "An Essay on Indian Corn," *Farmers' Cabinet*, 2: 75–77, 90–92, 123–125, 139–141, 150–152, 187–190 (Philadelphia, 1837–38). The quotation is from page 150.

and the seeds of the gourd; the spike contains, when thus unmixed with any other variety, twenty-four rows, which is the highest number of rows on any cob of Indian corn I have ever *seen*. I have *heard* of twenty-six rows.

Gourdseed is described in D. J. Browne's memoir[16] of 1856, though in language so similar to Lorain's that one wonders if Browne had any first-hand knowledge of the variety. His account reads:

Virginian White Gourd-Seed Corn.—The ears of this corn, which are not very long, neither is the cob so large as those of the big white or yellow flint, contain from twenty-four to thirty-six rows of very long, narrow grains of so soft and open a texture, that they will not bear transportation, by sea.... These grains at their exterior ends are almost flat, and grow so closely together from the cob to the surface, that they produce a greater yield than any other variety.... The colour of this variety is always white, unless it has been crossed with other kinds....

In 1848 J. H. Salisbury monographed the kinds of maize known to him and included the White Virginia Gourdseed among the varities with white kernels and a red cob.[17] He described the variety as follows:

Length of ears from 6 to 10 inches, diameter from 2 to 2½ inches. Cob light red, of medium firmness and thickly set with kernels considerably indented. Ear tapers gradually from base to summit. Depth of kernels, 6 lines, breadth in widest part, 4¼ lines, in narrowest part 3 lines. Chit nearly as long as the kernel.

In the report of the United States Patent Office for 1857 there is a chemical analysis of "Gourd-seed, or Horse-tooth Corn" from Virginia in which the variety is described as being 18-rowed with large pitted grains, nearly white, on a short stumpy ear.[18]

When E. L. Sturtevant monographed the corn varieties of the United States he included a number of southern dents. A gourdseed was No. 41 in his collection and a shoepeg No. 42.

41. White Maryland Gourd Seed, Landreth. Synonyms, Thompson Dent, Mo. Agr. Coll., and also "*common*" from Tennessee. Ear seven to eight inches long, and two and three-eights inches in diameter. Ear tapering, rounded at butt and at tip, which is unfilled. Sixteen-rowed. Kernel, white above, horny [honey] white below, long, dimple-dented, often pinched flat. Plant about nine feet tall, and bearing its ears about forty-eight inches from the ground.

42. Shoe Peg. From N. C. Ear about seven inches long, and two inches in diameter. Ear slightly tapering, rounded evenly at butt and tip, the latter unfilled and projecting; sixteen to 20-rowed. Kernel very deep and narrow, flat, deeply dimpled-dented; white above, honey white below.[19]

The mixing of the southern dents and northern flints began so early that it has been largely forgotten. The often-told story of the origin of Reid's Yellow Dent from a more or less accidental interplanting of an early and a late varitey is merely one of thousands of such mixtures and took place relatively late in the history of corn-belt dents. As early as 1813 John Lorain advocated the hybridization of flints and gourdseed and described the results of such mixtures. In his posthumous volume on agriculture, he expanded these ideas even further. After alluding to the mixtures of gourdseed and flint which were already prevalent in his day he described how they are produced when varieties are planted near each other.

This [the pollen] is wafted far by high winds, and is the cause of distant and unthought of mixtures. However, in general it is lightly and plentifully diffused through the field, and lodges in sufficient quantities on the silky fibers which project from the ears. A single fibre proceeds from each grain.... The change produced by this mysterious cause is generally gradual. We first see scattering whitish looking grains on the ears of the yellow corn growing among the white, and the reverse on the ears of the latter, when grown near to the yellow corns.

The foregoing facts have induced me to make experiments. The result seems to determine, that if nature be judiciously directed by art, such mixtures as are best suited for the purpose of farmers, in every climate in this country where corn is grown, may be introduced. Also, that an annual selection of the seed, with care and time, will render them subject to very little injurious change; provided the desirable properties of any of the various corns be properly blended together. They do not mix minutely, like wine and water. On the contrary, like mixed breeds of animals, a large

[16] D. J. Browne, "A Memoir on Maize or Indian Corn," in Joel Barlow, *The Hasty-Pudding: A Poem* (New York, 1856), 15–48. The quotation is from page 47.

[17] J. H. Salisbury, "Maize, or Indian Corn," New York State Agricultural Society, *Transactions*, 8(1848); 678–873.

[18] U. S. Patent Office, *Report, 1857, Agriculture*, 163–164.

[19] E. L. Sturtevant, in New York State Agricultural Experiment Station, *Annual Report, 1884*, 179–180.

portion of the valuable properties of any one of them, or of the whole fine original corns commonly used for field planting, may be communicated to one plant; while the inferior properties of one, or the whole, may be nearly grown out.

In doing this, it would seem that the colour of this mixture may be either the purest white, or a yellow, nearly, or perhaps quite, as deep and bright as the colour of the flinty yellow corns: also, that the economy of the plant formed by these mixtures may be rendered sufficiently early to ripen in any climate that is not very unfriendly. . . .[20]

Lorain described in detail the results of using more or less gourdseed in the mixture.

The quantity of the gourdseed corn mixed with the flinty yellow corns, may be determined, so as to answer the farmer's purpose. When the proportion of the former greatly predominates, the grains are pale, very long and narrow, and the outside ends of them are so flat that but little of the indenture is seen. As the portion of gourdseed decreases in the mixture, the grains shorten, become wider, and their outside ends grow thicker. The indentures, also, become larger and rounder, until the harder corns get the ascendancy. After this, the outside ends of the grains become thicker and more circular. They also grow wider, and the fluted appearance between the rows increases. The indentures also decrease in size until they disappear, and the yellow, flinty variety is formed. But, as I believe, not so fully but that the latent remains of mixture will forever subject it to more or less change.

Henry A. Wallace has called our attention to an article in the *Disseminator* of New Harmony, Indiana, for May 30, 1835, based upon an article in the *American Farmer*. It not only describes the crossing of different varieties but gives directions for detasseling and the production of first generation hybrid seed.

It is a cross between the early yellow Canada and the large white Tuskarora corn and partakes of the peculiar character of both . . . . That others may be enabled to make these improvements the process pursued will be repeated: — . . . It is only necessary to plant a patch of the Canada in the usual way, and every alternate hill of every third row with Tuskarora corn. When the male flowers (the tassels) of the Tuskarora make their appearance, carefully pull them out; this must be done as soon as they appear or the experiment will fail. In this process, a moment's reflection will show, the surrounding Canada corn will supply the pollen from its tassels and consequently the product will be a perfect cross between the two kinds.[21]

Browne, in the lecture on maize already alluded to, referred to the effects of mixing gourdseeds with other varieties. He described the mixture of King Philip 8-row flint with gourdseed as being desirable and indicated that varieties Nos. 2 to 6 in his collection "are the products of these essays."

A change in administrative procedure provides us with an unusually complete picture of maize and maize breeding in 1850. In those years the United States Patent Office sent out questionnaires concerning the state of agriculture throughout the Nation. The replies, together with outstanding articles from the agricultural press, were worked up into a general summary. For the year 1850, the replies were printed, apparently with no more editing than punctuation and spelling and are not even assembled by States.[22] Since one of the questions asked "what kind of corn is most esteemed in your vicinity" the replies from several score of the country's best farmers give a detailed and factual picture. Flints were widely grown not only in the North but also in the South, (New England, New York, Ohio, Illinois, Virginia, Kentucky, South Carolina, Mississippi, Alabama) and gourdseeds or mixtures with them are mentioned for nine States (New York, Ohio, Illinois, Pennsylvania, Indiana, Kentucky, South Carolina, Mississippi, Alabama). For all the country except New York and New England there is detailed evidence of the purposeful blending of diverse varieties, particularly of gourdseed and flint. Interest in corn breeding seems to have been particularly active in Ohio, and there are two mentions of mixtures. A farmer of Erie County wrote: "We cultivate several varieties of what is here called gourd-seed. They are all nearly a hybrid between the rough gourd-seed of the South and the flints of the North." Two writers from Springfield echoed the same opinion: "Varieties obtained by mixing the large Southern corn with that of the North;" and "We have many varieties of this grain, mostly crosses between the gourd-seed and small flint." In 1850 there was only one reply from Illinois. It described the most esteemed variety as "A species obtained by mixing the large yellow corn of Kentucky with the yellow flint, called here smooth yellow; it is prolific, full, smooth grain, covers the end of the cob, hard, sweet—cob brittle." From Iowa we get a glimpse of the way such mixtures came about: "The variety most esteemed here is white with a red cob, though a yellow corn, lately

[20] Lorain, *Nature and Reason Harmonized* . . . , 205.

[21] *Disseminator* (New Harmony, Ind.), May 30, 1835.

[22] U. S. Patent Office, *Report, 1850, Agriculture*, 232, 245, 301, 371, 396, 400, 454, 460.

introduced here from South Carolina, is the most productive; but it is sometimes injured by frosts." Evidence for hybridization comes from the Southern States as well. A writer at Dunlapville, South Carolina, referred to "the gourd-seed, or between that and flint." A reply from the Chester district in the same State goes into much more detail: "Our seed is so generally mixed, that it is hard to give it any known name; the old gourd-seed kind is gone very much out of use." He listed their best variety as "a mixture between the old gourd-seed and the low country flint-corn." From Alabama came the opinion that a "mixed kind of corn, of the flint and gourd-seed, is the best," and another Alabama writer told of breeding a new variety by mixing a small early yellow flint with a bigger and starchier "red blaze variety."

The history of Reid's Yellow Dent goes back to the 1840s.[23] In 1846, Robert Reid took a late, rather light reddish colored variety, the Gordon Hopkins, from Brown County, Ohio, to Illinois. Because of a poor stand the next year, a small early yellow variety, probably a flint, was used in replanting the missing hills. The family continued to grow the mixture; in 1893 Robert's son, James, won a prize with it at the World's Fair, and the variety became so widely grown that it dominated the corn belt.

The shuffling and reshuffling of these two basically different germ plasms continued, though in the north the term gourdseed was practically forgotten. The agricultural papers and the seed catalogs for the last half of the nineteenth century are full of references to the new varieties which were produced by hybridization and selection. George Kurtzweil has supplied us with the definite information that S. S. Barr of Davenport, Iowa, the creator of the dent variety, Golden West, was using bags to cover the tassels and produce controlled pollinations as early as the 1870s.

We have given detailed evidence elsewhere concerning the origin of Lancaster Surecropper, a dent variety of rather minor importance until various experts in the United States Department of Agriculture demonstrated that it was a particularly good source of inbred lines for modern corn breeding.[24] It was started in the 1860s from crosses between the common corn of the community, a large, late, rather rough dent, with a small, slender-eared corn which the Hershey family got from the Patent Office. They continued to cross other varieties into the mixture from time to time and selected seed ears which yielded well without any regard for ear or kernel type.

The controlled breeding of new varieties by farmers themselves was more frequent than anyone would believe who has not looked into the record. During the last five years we have attempted to interview as many of those farmers whose corn placed well in the early Iowa yield tests as could be located conveniently. We have been struck by the high proportion of them who began their work by the deliberate crossing of two or more varieties. Some of these men had highly elaborate methods of selection. Clyde Black, whose corn did phenomenally well in the early Iowa yield tests, had practiced a modified ear-to-row selection method with an ear-to-row plot located in the center of his regular corn field. He began with a smooth dimpled dent which had won the bushel championship in 1908. Two years later he obtained the much rougher (*i.e.*, more deeply dented) variety, Iodent, and after three years of growing the two kinds separately, each with its own breeding plot, he shelled both kinds and planted them together, putting the best ten ears into a breeding plot. Rex Richards, who showed in corn shows from 1915 to about 1939, bought his corn from Proudfit and from J. A. Mason. He mixed the seeds and from then on practiced ear selection in the field. Our interview with Fred McCulloch is of particular interest because he was one of the few who produced a corn which placed well in shows, yet which was demonstrated to have good yield when the Iowa tests were initiated. McCulloch got his start from his father who in the early 80s had planted a 35-acre field with alternate rows of a yellow Leaming and the variety, Pride of the North, both of them purchased locally. Field selections out of the mixture were made first by the father and then by the son. In 1903 the latter interplanted with a strain of Reid's dent from Illinois and a year later with an Iowa strain of Reid. He then practiced ear-to-row selection, planting his rows in a separate plot and detasseling part of the plants. He bought good ears very widely from corn shows and put their seeds into his selection plot. Every year he made in the neighborhood of twenty ear-to-row tests and roughly half of the ears tested were from shows.

[23] See Everett E. Edwards, "Reid, James L . . . ," *Dictionary of American Biography*, 15: 477–478 (New York, 1935), and the references cited there.

[24] Edgar Anderson, "The Sources of Effective Germ-Plasm in Hybrid Maize," Missouri Botanical Garden, *Annals*, 31: 355–361 (1944).

The northern flints were once the prevailing type of maize throughout the eastern United States, with an archaeological record taking them back at least to 1000 A.D. There is as yet no evidence for their having been preceded in that area by any other type of maize or of Mexican-like dents having been used there in pre-Columbian times. The Northern flints belong to a type of maize rare or unknown over most of Mexico but common in the highlands of Guatemala. The southern dents, on the contrary, are obviously largely derived from Mexican sources and by 1700 were being grown as far north as Louisiana and Virginia. As to how and when they spread northward from Mexico we have no evidence, other than the negative facts that they are not known archaeologically from the eastern United States and are not represented in the collections of Indian varieties from that region. As early as 1800 the benefits of crossbreeding these two different types of maize were appreciated by at least a few experts, and by 1850 the process was actively under way from Pennsylvania to Iowa and south to the Gulf States. By the 70s and 80s a new type of corn had emerged from this blending, though crossing and recrossing of various strains continued up to the advent of hybrid corn. During the latter half of the process, the origin of corn-belt dents from fifty to a hundred generations of selective breeding of crosses of northern flints and southern dents was almost completely forgotten.

The open-pollinated varieties of maize which dominated the corn belt of the United States for over half a century were the creation of pioneer farmers and corn breeders. It was from them that our modern hybrid corn is in large part derived. We have discussed elsewhere the bearing of these facts upon maize breeding and maize genetics.[25] The actual historical facts, as we have shown, are cross-checked by indirect evidence from cytology and from genetics. They outline an important field of investigation which it is the province of a trained agricultural historian to explore in full.

[25] Anderson and Brown, in *Heterosis*, chapter 8.

A SEARCH FOR CATTLE TRAILS IN MATTO GROSSO

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Introduction. Adventure, in a modern reenactment of the age-old search for a market, is relived in a report by Richard (Dick) Warde to Murdo Mackenzie, general manager of the Brazil Land, Cattle, and Packing Company. The trip covered an uncomfortable reconnaissance of 1,350 miles in late 1912–13 on the frontier of Matto Grosso in Brazil, adjoining the Bolivian border. Warde's object was to lay out a new route for marketing cattle and *xarque* (jerked beef) from the far interior of Matto Grosso—a district indefinitely depicted on most maps as *carayes* or swamps, just east of the Gran Chaco, the disputed country so long claimed by both Bolivia and Paraguay.

The Brazil company was organized in 1911 by Percival Farquhar, an international financier of New York and Paris. Early that year Farquhar was in Denver and met Mackenzie, informing the latter of his interest in setting up a land, cattle, and packing company in Brazil. He believed that this country contained one of the great undeveloped areas in the world, where meat might be produced cheaply and exported to European markets. Farquhar finally asked Mackenzie to become manager of the new enterprise, but the latter hesitated for some time before accepting, on account of his age (he then being in his early sixties).

When final arrangements were made, Mackenzie sent his son John (last manager of the Matador Land & Cattle Company), and James R. Burr (now manager of the Boston Land, Cattle, and Packing Company in Brazil), to São Paulo, for the purpose of locating and examining suitable lands. A few weeks later, John Molesworth, later of Clarendon, Texas, and Richard Walsh, who was at one time manager of the JA Ranch near Clarendon, were also sent down for additional reports on the proposed ranch divisions. Molesworth completed his duties in about two months, but Walsh remained with the company for two years and then established a large ranch in Rhodesia.

Early in March 1912, Murdo Mackenzie landed

in São Paulo, and by the close of that year more than a million acres of land had been blocked into a single ranch, while other holdings were rapidly being developed. Soon the company's properties totaled between 9 and 10 million acres, and they had acquired about 250,000 head of cattle. There were five different divisions of the ranch in interior Brazil—three in the state of Matto Grosso, one in Minas Geraes, and one in the state of Paraná. In addition considerable land was leased in São Paulo for fattening pastures. The location, acreage, and other data on each of the divisions were as follows:

Division	*Acreage*	*Number of Cattle*	*Original Manager*	*Headquarters*
Arapuá	1,000,000	70,000	Homer Vivian	Arapuá, Matto Grosso
Capón Bonito	150,000	25,000	James Burr	Vacaria, Matto Grosso
Descalvados	4,000,000	100–150,000	Jack Ramsey	Descalvado, Matto Grosso
Morungava	2,000,000	25,000	Emmett Roberds	Morungava, Paraná
Paracatú	2,000,000	50,000	Roy Vivian	On Paracatú River, Minas Geraes
Barrêtos	300,000 (leased)	30,000 (steers)	Alex Mackenzie	Barrêtos, São Paulo

Supervisor over all divisions was genial David Somerville. "Dave" was a nephew of the manager of the original Matador company before Murdo Mackenzie took over. He was educated for the practice of law in the finest schools of Scotland, but a visit to the Matador ranch in Texas in 1890 terminated his legal career. Instead of returning to Scotland, he remained on the ranch at $30 per month to learn the basic cattle business. Successively he was placed in charge of the Pampa (or White Deer) division of the Matador, then the Alamositas division, followed in 1905 by the Cheyenne Reservation division in South Dakota, and then to the Swift Current division in Saskatchewan. Dave was one of the truly colorful characters of the western industry, and his loyalty and devotion to Murdo Mackenzie were so great that he promptly joined him in Brazil in 1912. When Murdo returned to the United States in 1921, Dave was placed in charge of all the interests of the Boston Land, Cattle, and Packing Company, which was jointly owned by Mackenzie, W. Cameron Forbes, and Charles W. Perkins.

The most isolated of the ranches was located on the Paraguay River in western Matto Grosso. It was known as the Descalvados Division, and had previously been owned by a large European interest dealing in beef extract. The average herd comprised about 140,000 cattle and they were handled so little that they presented a serious marketing problem. They had to be rounded up and captured like wild animals; and there were so many thieves and outlaws that they were often stolen before they could be slaughtered and processed. Because the country was extremely humid, the only method of marketing was to convert the animals into *xarque* and ship the product down the Paraguay River by boat. Some of the production was marketed at Montevideo, but a great proportion of it had to be forwarded to Havana, which was a valuable, though low profit, outlet for a large volume of their product.

The *xarque* was loaded on boats at Corumbá. The employees of the company sliced the beef while it was on racks, running the knife down the bones and opening the meat out flat. These pieces of meat were cut into two slabs, salted, and dried in the sun. On account of the moist night air they were brought indoors each evening, and it required about fifteen days to dry the meat sufficiently for shipping. When ready, it was packed in gunnysacks and sold in the slab. As a small adjunct of the beef drying operation, they also dried the meat from the wild hog, or peccary, and shipped the hides. All of these products had to be salted before drying in order to preserve their quality.

The Descalvados Ranch was the one from which Theodore Roosevelt started for the interior, on his trip to explore the "River of Doubt." Richard Warde was engaged for the sole purpose of exploring the country and determining if there were a practicable route whereby cattle could be driven for slaughter back toward São Paulo. Unfortunately he was unsuccessful, and the meat still had to be shipped down the river until late in 1918 or 1919, when the railroad was built through to Corumbá.

Warde was a large-framed man, in his early thirties at the time of this report. He was over 6 feet 4 inches tall, and one of a number of adventurous young Englishmen who worked for an Argentine outfit, El Campos del Norte. Most of these Englishmen were highly rugged from a

physical standpoint and were younger sons of titled families. They were so filled with energy that they developed all sorts of quirks, ranging in some individuals from good-natured mischief to eventual deviltry. Warde apparently kept his head, for during World War I he was awarded the Victoria Cross, and after the War he was married and remained in England.

His choice of a steer for a pack and saddle animal was based on its ability to cross swamps through which horses and mules could scarcely flounder. The split hooves and dewclaws spread out so that the animal did not sink deeply in the wet spots. Along the border of Bolivia and Paraguay, on the Brazil side of the Paraguay River, are found quite large numbers of marshes, and it was to locate trails between or through them that Warde made the trip. On February 21, 1913, he reported to Murdo Mackenzie from the headquarters of the Arapuá division of the Brazil Land, Cattle, and Packing Company, as follows.

Warde's Report. Having written elsewhere to the fullest and best of my small ability, re cattle and weary trails for them, I write you separately the following account of what I have done, and failed to do, and of what I have seen.

From Arapuá to Coxim[1] nothing happened; of course, the usual picnic with straying mules, and lame mules, and would-be suicidical mules whenever they had to swim. However, in spite of the heat and the drought, they arrived at Coxim in good shape and for a miracle swam 150 yards of water like capivari[2].

Coxim is just a bit worse than most of the other towns (?) in the interior of Matto Grosso. There is a telegraph station which in its turn necessitates telegraph posts, and which provide additional leaning places for the inhabitants. The inhabitants for their part require considerable support, since it would seem that as a rule by seven a.m. they are mostly well and truly "pickled." Cãnha[3] is apparently their God, their world, their all. This is, however, common to nearly all of those with whom I came into contact from Coxim westwards. On the fazendas they give cãnha instead of coffee; in fact, it is the only thing one can get with ease and appears to be the principal means of sustenance.

The Coximites are a proud collection of "never-sweats", all of them liars and most of them thieves. In Coxim I engaged an ancient nigger who was guaranteed to be wise as to the track,—naturally he was not. On the second day out from Coxim, and after we had twice circled, I suggested that he was lost. This he did not attempt to deny; I suppose it was too obvious; in fact, he volunteered that he did not know the way. It now seemed that it was "up to me" so I hit due "Norte" to strike onto the telegraph wire which goes from Coxim to Cuyabá, and having got to it held it for the next sixty-four miles to Santa Luzia[4]. Here I sacked the ancient one and at the end of two days succeeded in finding another guide (?), more ancient still.

The result, however, of coming by the telegraph line was that I had missed passing the fazenda of Chico Garcia, in whose camp I would have found men who really did know the camp where I wanted to pass, and whereby I would have succeeded in reaching Alegré[5] before the camps were impassable. It is, of course, not improbable that

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[1] Arapuá is in Matto Grosso between Tres-Lagoãs and Corumbá, on the Nor-O-Este, a government-built railroad which was in the process of construction at the time of Warde's expedition.

Coxim was then a government telegraph station, and not on a railroad. It was about half way between Arapuá and Corumbá, west of the Paraná River.

[2] The capibari or capivari is the largest known rodent, possessing some of the living habits of the wild pig. It is 3-toed and weighs from 70 to 100 pounds.

[3] Cãnha, or pinga, is a "terrific" liquor distilled from sugar cane. Each *fazendaro* or farm operator had a mill for making sugar, which was pressed out into brown sugar bricks, known as *rapadura*. The remaining liquid, molasses, was fermented, and passed through the fazendaro's still to make the cãnha. The best liquor came from the first pressing.

[4] Cuyabá is the capital of the state of Matto Grosso.

Santa Luzia was a boat landing on the San Laurenço River, and was a camp located on lands belonging to the Descalvados division of the Brazil Land, Cattle & Packing Company's ranches.

[5] Chico Garcia was a native Brazilian cattle operator in western Matto Grosso.

In this case, the expression "in whose camp" means "on whose range."

The second use of the word "camp" refers to the terrain—fields, prairie, or spread of country—and is closely related to its Latin predecessor, *campus* or plain.

Alegré was the Brazil Land, Cattle & Packing Company's headquarters on the Alegré River. It was supposed to mean "happy," but at that time was "anything else but," due to a bad location from the standpoint of communications, marshy ground, and hordes of neighboring cattle thieves.

Chico Garcia would have refused to supply a man; this, however, is purely surmise.

After leaving Santa Luzia we found lots of water which made things easier, though in most cases the water was real bad. It was all old rain water, and it will suffice to say that it was many weeks old and stank; also it was hot, not warm, but for example too hot to bathe a six months old baby in—I tried it to see.

Here we came onto an old female *onca*[6] hunting pig. She, however, did not wait long enough to get a fair shot, also my small mule was very nervous and hated gun fire; in fact, she would neither eat nor drink if in the least upset, so it was necessary to travel with a great deal of care.

The new guide stayed about forty-six miles, when his wealth of knowledge petered out, and he showed me a hill about twenty miles off and promised me that if I arrived there I would find people, however, he was a lot smaller than I am, and so I persuaded him to come too.

This was the anniversary of the day when my fond parents had the misfortune to introduce me into this world. I cannot say that I wished myself many happy returns of the day, and am very sure that I did not. I had intended to grow fat this day, and as a result missed a sitting duck through trying to hit it in the head, and could not catch a fish for love or money. On December the 22nd I arrived at Puiva[7]. Here I had been promised that I should find guides in abundance, all I actually found was a very bad specimen of a Brazilian crossed with a Bugri[8] and four yellow kids who amused themselves by squashing bloated mosquitoes on the face and legs of their parents. These kids, in common with others with whom I became acquainted later on, have apparently become the most extraordinary colour through eating earth! I do not know whether it is common in all parts of the land, but it is apparently due in some near or distant way to their lack of blood. It is a craving and they just get down to it and cram their mouths with dirt, and not only children do this but full grown (?) men and women also.

All the way from Coxim the mosquitoes had been bad, but here they were awful; all night long till about three a.m. was just a buzzing hell, and the heat inside a mosquito curtain made sleep impossible. The only possible relief was by going down to the river and jumping in, to cool off. From here westwards they remained the same,—all sorts and sizes, the hunch-backed, the spotted-winged, the first cousin of the Arctic mosquito, and a great big fellow. Between them all they made life dark. Without them the night after the heat of the day would have been like a woman's hand to a feverish fat head; as it was they were for the main part indescribable.

On the 23rd of December, the man in charge of the *retiro*[9] at Puiva arrived and he turned out to be the only man who could take me across to Alegré, and he would not. First of all he said that his wife was going to be confined so I assured him that I did not want *her* to come; then he said that he could not cross owing to the rains, and then that he was too busy. Accordingly I started off to look for a man who both would and could make the trip. I left the steer and my gear at Puiva and crossed over to the other side of the Rio Correntes and then spent three days losing myself and looking for a guide. I might just as well have looked for a whisky and iced soda!

Christmas night found me trying to persuade a wee mule who had stopped, that she was really as fresh as paint. Since the time that I attained years of discretion (or have been attaining them) I have always maintained that Christmas days after one has left the nursery stage, are nothing other than the bitterest and saddest of all bitter and sad days and vain reminiscences, and I am now quadruply convinced of the truth of this assertion.

If any man wishes to prove to me that I am wrong, then all I ask of him is that on a Christmas day or night to find himself on foot with an "all in" animal, with twenty million mosquitoes on familiar terms with him, squatting on an ant hill on a trail he does not know a foot of, ignorant as a babe unborn as to whether he can find water within two or twenty miles and remembering that once upon a time he was in the habit of having a hot bath daily, a drink brought when he wanted it, and a well spent youth enjoyed to the full. Then if at an end of thirty-five minutes he does

[6] The *onca* is a cat related to the jaguar. Sometimes it is referred to as the Brazilian tiger although it is unrelated either to Old World tigers or leopards.

[7] Puiva was on the Rio Correntes, and was a big ranch headquarters belonging to Moraes Delgado.

[8] Bugri is a popular generic name for a Brazilian Indian.

[9] A *retiro* is a "cow camp" occupied by an employee and his wife, and is usually located at a convenient spot for handling the cattle of a certain area.

not agree with me, I say truly of such must be the Kingdom of Heaven!!

However, to make a longish story short I addressed a few pointed remarks to the world at large, which, I must admit, were not all devoid of any reference to the Brazil Land, Cattle, and Packing Company, took the bit out of the small "baste's" mouth and got her up. Soon she started to nibble, so I climbed coyly on board, trying to pretend I had not and lay low; she nibbled on and in a few minutes again hit the pike. I didn't sing carols! We wiggled along for about an hour when we got to water so I camped for the night and not a mosquito. In the morning I arrived at a Telegraph Station at Correntes[10] and here life looked brighter.

I found a small cock-eyed launch in from Cuyabá and the local telegraph clerk very kindly invited me to breakfast with her skipper; I accepted without much hesitation—food had not been my strong suit for several hours. On board I met the son of Moraes Delgado, the owner of Puiva, and also of Correntes and other camps on the Rio Cuyabá. The son, Snr. Abrahão Moraes, is in charge of the camps in this (Rio Correntes) district, and lives there. This fellow showed me nothing but kindness and the fact that I got as far as I did afterwards I owe to him. He at once undertook to send his man from Puiva with me and promised that provided the camps were passable that we should get through "some old day." He helped me in every way and did all that he could for me, best of all filled my soul with hope and my belly with food.

Owing to the nature of the country I did not like his man to make the return journey alone, and as he would not have been able to await my return had we succeeded in arriving, I engaged a *camerado*[11] to go with us in order to return with Marcí. I found it impossible to get a suitable man, so wrote to Moraes for one and also asked him to sell me a couple of horses as I had to mount these fellows. He sent me a top-hole man and two very dear (and one very bad) horses, but I judge no man by his horse dealings—not only having a bit of Irish blood by my father but also having done a little horse dealing myself. I returned to Puiva on the 28th, leaving on the 30th.

[10] Correntes was a small village on the Rio Correntes, chiefly headquarters for the Moraes Delgado ranch.

[11] A *camarado* is a comrade or companion, or even a guide or bodyguard.

I got some nice fish on the 29th, having nothing else to do. The heat was terrific and I gave my body over to the mosquitoes. I managed to get two *dourada*, one of eighteen pounds, the other smaller, and a 7-pound *pacu*.[12]

On the night of the 30th we camped on Company land, at the division with the camp of Moraes.[13] Here are hundreds of *arara;* here also in 2 feet of water a *pirānha*[14] took a piece out of my foot. From here onwards for 25 miles the point (country) was pretty good so far as firmness was concerned, but the high, old grass played old nick with the troop, and at the end of three days they were raw from below the knee to the hoof. The only way to ride through this *marseiga* is to put boots on the animals, and I intend to get a boot made similar to the fetlock boot they use at home for animals which brush[15], only without the pad—this will, I think, save the poor brutes. There was no track save an old game or cattle trail to water and at times we went through grass higher than our heads.

About twenty-four miles west of the Bay of Lara[16] we hit onto the creek "Formosa" along

[12] A *dourada* is a well-known game fish peculiar to tropical America and Africa. The name is applied to several species of the genus *Salmonis*—the golden trout, so designated because of the color of its flesh.

A *pacu* is a smaller river fish of the same family, flatter and deeper bodied like a ray. The genus is *Myletes*, and several species are very common.

[13] Snr. Abrahão Moraes, previously mentioned.

[14] *Arara* are popularly known as "big parrots." The particular birds referred to are probably the largest of the macaws and are blue-red in color. There are at least three genera, now grouped into the family *Ara*.

A *pirānha* is a toothed fish of the genus *Serrasalmo* which is highly carnivorous. It belongs to the same family as the *dourada* and *pacu*, and serves as a scavenger for dead animals in the river. It will attack and kill disabled people or animals unable to escape. Any animals with wounds are particularly vulnerable in crossing a stream.

[15] *Marseiga* is a coarse tall grass that has dried on the ground, and must be burned off two or three times a year. Guarded sections, or those between streams, were burned as separate units. When the new grass was 3 to 5 inches high the cattle were turned out to graze. Cattle recognized the relation of the smoke cloud to fresh grass, and would follow it the same as a rain cloud in a dry country.

American horsemen call this defect of "brushing" in the gait "interfering."

[16] The Bay of Lara was north and east of Corumbá.

which we had to travel for the next sixty miles. We got too high up and had to travel eight to ten miles to find a crossing.

This creek is one of many in different parts of the *Pantanaes*,[17] and from end to end is anywhere from 120 to 150 miles long. They are rather hard to describe as they are neither creeks nor lakes; in the true sense, a mixture of both. The natives call them "*corixo*"[18] (pronounced kureesho), and they consist of a line of lakes of varying length and breadth linked together by strips of marsh, which is thickly covered with weeds and water bush, and bogs badly. These lakes never dry up; the waters are still and are full of fish, *pacu* and *pirānha*, also *jacaré*[19].

The *corixo* are the haunts of all sorts of wild fowl—of which I only know the Indian names and so will not worry you with them; there are three varieties of the heron—stork species, a big all-white bird with black head and beak, and a deep orange band around neck; a smaller size, slatey grey in colour, and another all brown; duck in abundance, the big black fellow with a broad white bar on wing; also snipe, etc.; also *Ceiro* deer and other kinds; capivari, pig[20]; in fact all game and fowl, since they are the only watering places in the dry season.

There are some parts on these lakes which can only be described as being very beautiful, and were it not for the mosquitoes by night and the thousand biting, stinging, buzzing flies by day, I can think of few places with which I am acquainted in this world where I would choose to live in preference. There is a smell around these camps after the rain which is like the smell of Kent in spring (and that smells like dawn in Paradise). There is a world of truth in Kipling's statement that "smells are surer than sights or sounds to make your heart-strings crack, which start that awful whisper at night, saying 'You fool, come back' ", or something to that effect.

At the crossing of the "Formosa" I saw a rough and ready corral which had been built, I was told, by a reputed cattle thief, and on the other side in the brush had been built a quite substantial little ranch. This is also reputed to be the work of the same cattle thief, but I am very doubtful. By signs left, this house was clearly occupied by women as well as men; also they had built a canoe (and taken it away) and I think it is far more likely that this was erected by rubber hunters,—it is far too permanent an affair for cattle thieves. Further down we came onto two more huts, wattle and reed, again I think *mangabeiras*.[21]

From the pass we kept going northwest by west at times holding in close to the creek and at others opening out, but never at any time were we more than ten miles distant from her. The rain was coming down in true Matto Grossense style every day and the going getting worse every hour. The camp[22] was slowly but no less surely becoming one huge lake and life was not pleasant.

Mosquitoes were as bad as ever and necessitated the keeping going of smoke fires at night for the animals. On January 3rd they gave us a veritable "day in the country". By foolishness, out of soft-heartedness, I was keeping only Billy the Boi (his pack ox) and one horse on the cord at night, as an animal never seems to get a belly full of grass if staked, and to hobble them was nothing other than cruelty owing to the state of their fetlocks. Accordingly they made for distance, some beast probably scared them, and it was two P.M. before we found them.

On January 4th we got to a spot called the *Bahia das Oncas*[23] and by this time the picnic was in full swing. We camped for breakfast and afterwards started away to cross a small *corixo* which is a tributary of the Formosa at the only pass which Marcí[24] knew. We had all the occupation we needed. She (the pass) was about three feet deep

[17] The term *Pantanaes* applies to a section of low, swampy, overflow country traversed by slow-flowing creeks, or to the creeks themselves.

[18] *Corixo* is also a name for the rivers or streams that connect the lakes.

[19] *Jacaré* is the native name for the cayman, related closely to the alligator and crocodile.

[20] The herons are difficult to identify by species as there are many that conform to this general description. However, the largest one is known as the Jabiru stork.

The big black duck is probably a wild Muscovy, *Cairina moschata*, a species which apparently originated in America. It lights and perches in the trees.

Ceiro deer are one of the three species common to South America, probably the largest of the Brazilian deer.

Warde refers to the peccary or *javelina* as a pig.

[21] *Mangabeiras* are rubber sap gatherers.

[22] Again Warde refers to the open plain.

[23] *Bahia das Oncas* means Bay of Jaguars. It was on Formosa creek.

[24] Marcí was the guide furnished by Snr. Moraes.

in water, thick weeds, and bogging. We got half way and had to come back, as to go on was to drown the animals; it was too shallow to swim and they bogged right down,—all except Billy the Boi; Billy has a brain and refused to enter, he knew he could not pass. We then struck up the creek to look for another pass, and dusk came before we found it, so we camped in nine inches of water, and made a fire in a bucket.

I for my part was wondering why I had not listened to her[25] and stayed at home! We were all a bit sad and also seedy, all sick with diarrhea, which I had had for ten days, the others for less, —presumably due to drinking putrid water. This compels me to say that I have always had a dislike for the teetotal fanatic, and if I hate any man in this world it is surely him. May the Lord help the next orphan who comes babbling to me of the merits of water and of "how well you will feel if you drink it always." I have at one time or another drunk some of the foulest dopes masquerading under the name of liquor from Chinese spirit and rank vodka to falsified whiskey, and never in my life has it made me ill—but this hot stinking water was the gaudy limit. Within ten minutes of swallowing you ached in front, back, and sides; it was very nearly bad. At all events it took me three weeks to get my insides tamed again.

January 5th opened fine and the world looked better. We continued hunting for a pass, eventually finding one. We all took it wet, our animals in turn going under in about three feet six inches of water from getting tangled up in the weeds. Billy as usual was the star turn and came across right side up all the way. On the far side the going was worse than ever, and we were travelling under two miles per hour, bogging fetlock deep every stride and we were approaching lower country all the time.

It was sticking out a mile what was going to happen; however we could still go on, so we went. We camped for breakfast and I gave the animals a four-hour rest—they needed it as they were all in trouble. We got going again at about 1:30, and 4 o'clock saw us finished—beat—and we were all a foot deep in bog, and Billy spread out like a camel. I went ahead about a mile and a half to see if there was anything better, but nothing doing for Bright Eyes—it was worse than ever and just as far as one could see was all the same. The only remedy was to hit back and try above. This was easier said than done; it was raining heavy Matto Grosso rain, and the troop was "all in." Billy led us, steering like a dray. We floundered behind him, pulling our beasts, pushing Billy, swearing and sweating, the animals wallowing behind, rolling and pitching like a derelict tramp steamer in the Bay of Biscay with a northeast gale blowing. We made back to where we had breakfasted and camped the night.

In the morning we got another soaking in the *corixo*, not that it mattered in the least, we had been wet since I could remember. We were going dead slow, trying to cheer our weary crocks[26] up. About four miles higher up we again crossed only to find things exactly the same as lower down.

The only possible chance that now remained seemed to me to try and find country where cattle were running, as probably they would have trampled it firmer. So I left *Camarado*[27] with the gear and with Marcí set out due south. I do not know how far we went—I do know we spent two days going and I do know that we had a rotten sort of ride. If we had gone sufficiently far south we would probably some time have found some way round, but it seemed to me that to do this would be a waste of time, as my object was to get through on the cattle track and to go away south would be in no way the route; therefore, there remained nothing for it but to turn back. We all of us wanted to go on, but so far as I know it was not possible to do so.

Water, so long as it is not a swimming matter, would not have turned us back. That is merely a matter of discomfort, for one can still go on, but bog was the end; our animals just lay down in it. We did our best but were beat.

We started off back on the 9th of January and for the next seven days we found things rather difficult; camp, which on the outward (trip) had been firm, was now under eight inches of water, bogs all over the shop, and heavy rain on and off all the time. Everything in the suffering outfit was wet,—food, hammocks, gear, and ourselves; the only dry spot in the whole shooting match was the inside of a bottle which in the earlier days of the outward journey had contained pinga—that was dry—quite and very dry. We were short of food to make life more miserable still, and as is always

[25] He probably refers to Lady Luck, or his "guardian angel."

[26] Warde refers in this case both to his people and his animals as worn-out "crocks."

[27] Marcí's comrade.

the case on such occasions there promptly ceased to exist any life in the surrounding country. Marcí missed a fat white-tailed doe at forty yards (he handles a gun like a woman handles a cricket bat).

On the night of the 9th we dropped down onto the Formosa again and ate fish, catching about a dozen *pirānha*. These fish are not large but are very excellent eating. They will take meat, fish, or rag bait, but 'ware their teeth. The only way to catch them in these lakes is with a short line on a stick; with a long hand-line they bite it through in half a dozen places the moment it touches the water. At night one can catch *pacu*, which are well worth while. They come best to fruit of the *tacau* tree[28] or to fish bait; in the day time the *pirānha* will never let them get hold. The *pirānha* is the hardest case in the fish line that I have met; they average up to fourteen inches long, and carry a mouth full of teeth which are the genuine article. An animal, steer or horse, etc., which is wounded, or with sores, and enters the water, is all gone in a very few minutes. I shot a capivari and he fell into the water and sank close to the bank; within ten minutes he was a bare skeleton. This is not a "fishing" story but the truth. A man does not need to swim around in these lakes unless he has to, in which case he had better keep all his gear on.

The *pirānha* has got the *jacaré* beat and he keeps close in shore. The *jacaré* are not big—they run up to about 4 feet to 4 feet 6 inches long. They have, however, one peculiarity, at least so it struck me, viz: the teeth of upper and of the lower jaws fit exactly one between the other and the points of the teeth of the lower jaw pass through the lip of the upper, and of the upper thru the lip of the lower jaw. There is no "stop" when once they catch hold; they can take an awful lot of killing and are generally shamming when they seem to be dead.

On the 16th we were back to Puiva, the journey had been the same all the time, everywhere under water, flies awful—*matukas*[29] big and small, all over one, big as humming birds (almost). Close to Puiva I saw some wild peacock, similar to the big chap, only a smaller edition. Here at Puiva I parted with Marcí, a pure Cuyabano and I never want to travel with a nicer fellow. Here I also left my good friend Billy, or rather Baron Bill the Boi.

I have packed with horses, mules, reindeer, and dogs, but I have never met with so perfect a pack animal as this steer. He cost 65$000[30]—his owner thought he had sold him well, but he, poor fool, lacks in understanding. Baron Bill is no ordinary chunk of meat wrapped up in raw-hide,—he is a prince, a gentleman, a steer, and an orphan child in one, with more intelligence in his belly than seventy-five percent of mankind have in their heads. He is bred without a doubt by a bull from the Weald of Kent out of a Sussex cow; he has only one defect, viz: his speed; he will not travel more than three miles per hour for God or man, but this he will do all day long, and night too. If you try to drive him over and above this, he will take six side steps like a crab, collapse gently on the floor, grunts, gazes at you with a look which says more than can be expressed by the human tongue, chews the cud for fifteen rounds, sighs, gets up and toddles on again.

He knows to an half inch when he can pass between timber, if a low branch, he stoops and goes through with his four legs at half cock. He feeds all the time he is travelling, so that immediately the pack is off him, he lies down and rests—he is suffering wisdom personified. I have such a genuine regard for Baron Bill that I have bought him myself and have left him in the *Pantanaes* to rest and feed, to heal his sore fetlocks (if a steer has fetlocks), and to watch the world go round, until such time (if ever) that it may please God or my chief to send me to that part of the earth again.

He served me well and I am grateful to him. I could write a poem in his honour, the gentlest, best-natured, white-hearted beast that ever grew

[28] "Tacau" is probably a phonetic spelling invented by Warde to represent the nasal sounds involved in the Brazilian pronunciation of "tucum." The tree is a palm, some 3 to 4 meters tall, identified by Director F. C. Hoehne of the Institute of Botany in São Paulo, Brazil, as *Astrocaryum leiospatha* (Barb. Rodr.), and by Dr. Alexandré Curt Brade, Chief of the Section of Systematic Botany, Botanical Garden, Rio de Janeiro, as *Pyrenoglyphis piscatorum* (Wedd. ex Drude) Burret. These are two different palms whose fruits serve as bait for the *pacu*. Brade reports that the palm fruit has a sweet pulp, and that it is widely used as a bait for fishing in Corumbá. Hoehne observed the process of catching fish with the ripe fruit (coconuts) of the tucum tree in Matto Grosso, and states that when the fruit falls into the water the *pacu* always tries to catch it. According to Brade the palm is very common along the Paraguay River, where it is called "Tucum de Fruto Doce [sweet fruit]," and in Matto Grosso, "Tucum Mirim de Fruta Doce."

[29] *Matukas* are gnats.

[30] 65 milreis, then about $35.

a horn. I take off my hat to him,—may he ever find good grass, he taught me a lot. If ever the Company bring cattle over, I will loan him to them. Bill is just the man to head the mob; he will lead them into water, corrals, railway waggons or Kingdom Come—but he will not face *jacaré* and he will not march over his own speed limit—and if he does not know his own pace, who in the wide world does?

The two men I had with me were both real men, one a Cuyabano[31], the other a Borora Indian, always cheerful, ready to do anything or go anywhere. Each was as near one-half child and one-half beast as one can get, as superstitious as women, ignorant as babes, but only too anxious to learn. To a listener our discussions at night would have been amusing, we talked of beasts, of religion, of science, of war, of love, and of women; we discussed everything under the sun bar art, and no man who loves nature wants art!

These Borora Indians have some curious customs—the method of treating their dead seemed to me rather original. They bury them for three days, after which they take them and leave them to soak in a creek for three days, after which they fillet them, and take the bones only to the place where the individual was born, and bury them. They also have a liking for white-skin men, and when they can catch one they take him off to cross with their belles. If you fight they kill you and give your head to their kids to use as a target for practicing to throw with a spear. I would not think of resisting capture!

In Correntes I came across two rather queer things. One was the case of a child, a purebred Cuyabano. When she was born her mother was very ill and the child was given to a Borora Indian woman to wet-nurse. When the child was about eight months old she was returned to her mother. This girl is now about six years old, understands Portuguese, but can only speak Borora, and cannot speak Portuguese! What is the explanation? The other queer thing I saw was a small black bitch being sucked by young pigs! In view of the case of the child, what I want to know is, will these pigs later on only bark?

Of the trip from Correntes until out of the *Pantanaes* there is little to say. It was a moist trip, and the same from there to Arapuá—beyond the fact that it is hungriest stretch of camp with which I am acquainted.

From start to finish I covered about 1,350 miles—I have done my best to tell you of everything and I hope I have succeeded in giving you some idea of the country and things that are of it.

Yours very sincerely,
DICK WARDE.

[31] Resident of Cuyabá.

STUDIES IN THE HISTORY OF AMERICAN SETTLED AREAS AND FRONTIER LINES

SETTLED AREAS and FRONTIER LINES, 1625–1790

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Introduction. The present article aims to offer a consideration of American settled areas and frontier lines for the period 1625–1790. The special field of interest is the Atlantic slope; more specifically, the territories which eventually became the Thirteen Original States, together with their outlying possessions in Maine and the nearer "West."

This article is the first of a series of three studies which will consider the settled areas and the frontier lines in English America to 1776, and in the United States after that date. The second study will discuss the settled areas and frontiers for the period 1790–1880. The third in the series will discuss the settled areas and frontier lines of the years 1890 to 1910.

The general purpose of this series of three interlocking articles is to undertake an examination of the following propositions: 1. That during the years 1607–1790 there existed, on the Atlantic slope, a frontier which began at tidewater and gradually pushed into the interior. 2. That during the years 1790–1880 there existed in the interior of the continent a frontier which from the "east" advanced into the "west," year after year, and

decade by decade. 3. That during the decade 1880–1890 that frontier disappeared.

Each of these three propositions has its individual history. It will be convenient to take up for brief consideration first of all the second of these propositions. This second proposition was originated by Francis A. Walker, Superintendent of the Ninth Census, and compiler of the *Statistical Atlas of the United States*, which was published in 1874. In this atlas Walker offered a series of maps showing the distribution and density of the population of the United States at each decade from 1790 to 1870. Each of these maps displayed a "line of population" or a "frontier line" where the settled area ended and the unoccupied wilderness area began. Walker formulated the concept of the frontier, and was the first one to describe, on the basis of statistical information cartographically represented, the frontier of 1790, 1800, 1810, etc., and to measure its length. His maps showed, or so he thought, at least two truths: 1. During the years 1790–1870 there was one frontier line; and 2. The general direction of the movement of this frontier line was from east to west. The maps in the atlas of 1874 are accompanied by a series of descriptive remarks from his pen.

Walker served also as Superintendent of the Tenth Census, and in this capacity planned and saw to the execution of a map showing the distribution and density of the population of the United States as it was in 1880. This map, with an accompanying description, appears in the Census of 1880. Thus he mapped all the frontier lines for the years 1790–1880 and "described" them.

The third proposition, that the frontier line disappeared some time between 1880 and 1890, can be traced back to the Superintendent of the Eleventh Census, Robert P. Porter, who announced in 1891 that there was no longer a frontier line. This announcement was soon afterward given wide circulation by Frederick Jackson Turner when he quoted from it in his highly influential historical essay of 1893.

The first proposition, that during the years 1607–1790 there existed, on the Atlantic slope, a frontier which began at tidewater and gradually pushed into the interior, was fathered by Professor Turner himself. The first statement of his opinion was made in 1893. In the following excerpts, I have italicized various terms of key importance:

> At first *the frontier* was the Atlantic coast. It was *the frontier* of Europe in a very real sense. Moving westward, *the frontier* became more and more American. . . . In the course of the seventeenth century *the frontier* was advanced up the Atlantic river courses, just beyond the fall line, and the tidewater region became *the settled area*.[1]

In 1906 Turner wrote on the same theme, thus:

> Ever since the beginnings of colonization on the Atlantic coast *a frontier of settlement* had advanced, cutting into the forest, pushing back the Indian, and steadily widening the area of civilization in its rear. There had been *a west* even in early colonial days; but then it lay close to the coast.[2]

And in the same volume, speaking of the backwoodsman as a frontier type, Turner asserted:

> Frequently he was the descendant of generations of pioneers, who, on successive frontiers from the neighborhood of the Atlantic coast towards the interior, had cut and burned the forest, fought the Indians, and pushed forward *the line of civilization*.[3]

In 1908 Turner read an important paper, "The Old West," before the State Historical Society of Wisconsin.[4] In this paper the western area under discussion was the "area intermediate between the coastal colonial settlements of the seventeenth century and the Trans-Alleghany settlements of the latter portion of the eighteenth century."[5] In point of time, the area studied is surveyed for the period from about 1676 to about 1763.

Into the northern parts of the settled area the New Englanders moved, carrying civilization into interior New England from the coast. The distinctive type of this frontier, Turner declared, was the community type of settlement. The frontier of the Middle region in this period was divided into two parts, one running up the lines of the Hudson and Mohawk rivers; the other, trending into the Great Valley, and so on to the Southern uplands. After describing the interior settlements in Virginia and the Carolinas, Turner made the statement: "The settlement of Georgia, in 1732,

[1] *The Early Writings of Frederick Jackson Turner* (Madison, Wisc., 1938), 189.

[2] Frederick J. Turner, *The Rise of the New West, 1819–1829* (New York, 1906), 67.

[3] *Ibid.*, 87–88.

[4] "The Old West," in Frederick J. Turner, *The Frontier in American History* (New York, 1920), 67–125.

[5] *Ibid.*, 68.

completed the Southern line of colonization toward the Piedmont." This assertion would lead one to infer that in the back country there existed an unbroken series of settlements, facing west toward the uplands. The impression is not dispelled by these words which quickly follow:

> We have now hastily surveyed the movement of *the frontier* of settlement westward from the lowlands, in the later years of the seventeenth and early part of the eighteenth century. There is much that is common in the whole line of advance.

Actually, however, no such continuity of the settled coastal area existed at this time (1730–1740) as seems to be implied.

And what of the interior Southern uplands, which were, Turner conceded,

> comparatively inaccessible to the westward movement from the Lowlands, and [were] equally accessible to the population which was entering Pennsylvania.

His answer is:

> "Thus it happened that from about 1730 to 1760 a generation of settlers poured along the mountain trough into the southern uplands, or Piedmont, *creating a new continuous social and economic area*, which cut cross the artificial colonial boundary lines .... This New South composed the southern half of the Old West.[6]

Next, going on to the peopling of the interior, Turner wrote: "Thus *a zone of almost continuous German settlements* had been established, running from the head of the Mohawk in New York to the Savannah in Georgia." And finally, to come to his set of conclusions, we may select from them the first of the consequences of the formation of this Old West:

> *A fighting frontier had been created all along the line from New England to Georgia*, which bore the brunt of French and Indian attacks and gave indispensable service during the Revolution. The significance of this fact could only be developed by an extended survey of the scattered border warfare of this era.[7]

The generalizing and unifying power of this justly famed essay is incontestable, and generalize the historian must, if he is not to be overwhelmed in a sea of particulars. Here it is enough to inquire, however, whether the choice we must make in the present instance lies between unorganized particulars and Turner's set of generalizations, or between Turner's generalizations on the Old West and still other generalizations that could be framed, generalizations perhaps still more tenderly conscious of the underlying particulars and details? It is well to remind ourselves that a too complete, a too elegant unifying of details may sometimes work harm to meaning, just as does a clumsy or bungling performance of unifying.

In 1914 Turner published an article, "Frontier in American Development," [8] which contains additional passages bearing on the point under discussion. The piece opens with a rubric, "Frontier Line." The author began by asserting that the American frontier has been the temporary boundary of an expanding society at the edge of substantially free lands. Then follows text matter of relevance:

> The United States Census Office in its maps of density of settlement at each decade from 1790 to 1890 laid down as the "frontier line," the boundary, roughly speaking, of the population of two or more to the square mile. For the colonial era, Professor Edward Channing, in his *History of the United States*, supplies maps showing approximately *the settled area* in 1660, 1700, and 1760. .... *The frontier line* depicted on these maps [of Channing and of the Census Office] is irregular, sometimes bounding peninsulas and islands of exceptionally advanced settlement as on the lower Missouri, sometimes restrained by wilderness areas intruding like bays or islands in *the settled area*, as the Adirondacks.[9]

Immediately afterward Turner referred, in passing, to "*the advance of the frontier*." Under a new rubric, "Significance in Eighteenth Century," Turner wrote:

> In the early part of the seventeenth century *the frontier* lay along *the settled portions* of the Atlantic coast. It was, in a sense, the frontier of Europe, where old world institutions were undergoing adjustment to the colonial wilderness. By the second half of the eighteenth century *the frontier* had reached the Berkshire hills of western New England, extended up the Mohawk Valley, in New York, and along the Great Valley of Pennsylvania, and its extension in Virginia lay as far west as the Piedmont, or upland, region of the South beyond the falls of the rivers.[10]

[6] *Ibid.*, 99–100 (italics added).
[7] *Ibid.*, 106–107 (italics added).
[8] See Andrew C. McLaughlin and Albert B. Hart, *Cyclopedia of American Government* (New York, 1914), 2: 61–64.
[9] *Ibid.*, 2: 61–62 (italics added).
[10] *Ibid.*, 2: 63.

Reviewing these passages it is plain that Turner had been deeply impressed by Francis A. Walker's doctrine of one frontier line, *the* frontier line. Turner used the terms in the singular in every case but one. When in relation to the early part of the seventeenth century he used (1914) the expression, "the settled *portions* of the Atlantic coast." This expression implies that since there were several settled portions on the Atlantic slope, so, then, there were several frontiers on that slope. But perhaps Turner's mind was mastered by a stereotype; in any case he did not see in this instance a plurality of frontiers, and certainly he did not match the plural of "settled portions" with the plural of "frontier." Habit and custom had perhaps grown too much for him; it was now more than two decades since he had first written on "the frontier."

In April 1914, Turner completed an essay, "The First Official Frontier of the Massachusetts Bay."[11] In this he asserted that, "about the close of the seventeenth and the beginning of the eighteenth century there was an officially designated frontier line for New England." Furthermore beyond "this New England frontier" there was a belt of settlement in New York, the Hudson River frontier.[12] The maps of settlement, 1660–1700, cited by Turner in this connection were: Edward Channing, *A History of the United States*, map in volume 1, pages 510–511, and map at the end of volume 2; Avery, *History of the United States and Its People*, page 398 of volume 2; Lois Kimball Mathews, *Expansion of New England*, pages 56–57, 70; and a contemporary map which showed conditions at the close of King Philip's War in William Hubbard, *Narrative of the Troubles with the Indians in New-England* (Boston, 1677).[13]

In discussing the military frontier of New England, which was adjacent to the coast towns, Turner noted that the colonial authorities gave protection to the frontier towns, which themselves loudly called for help. Frontier defense used garrisons, militia, and rangers to patrol from garrison to garrison. "These were prototypes of the regular army post, and of rangers, dragoons, cavalry and mounted police who have carried the remoter military frontier forward." Then Turner went on to say: "It is possible to trace this military cordon from New England to the Carolinas early in the eighteenth century, still neighboring the coast..."[14] The sense of this last sentence seems to be that from New England to "the Carolinas" one continuous frontier line, "this military cordon," hemmed in the settled area on the wilderness or outer edge of the settlements, toward the end of the seventeenth century. The sentences quoted above, therefore, may be taken as representing Turner's settled ideas concerning the "one-ness" of the early Atlantic coast frontier.

It must be obvious to all who are acquainted with the general run of the facts of American history that the notion of the "one-ness" of the frontier has obtained a strong hold on the minds of historians. This assumed "one-ness" of the frontier line, whether for the period 1790–1880, or for the period before 1790, stands in need of careful examination. The examination is justified on at least two counts: first, the assumed "unity" of the frontier lines, for any given moment, has an ultimate and important bearing upon that tantalizing query: At what date did the frontier line end? In 1890, or at some other time? Second, if there truly existed more than one frontier line at a given time, where the conventional historian sees but one, is it not possible that some of the particular facts of history, for a given area, have been warped or distorted by a groundless doctrine rather than been given freedom to speak for themselves?

The general drift of this series of articles will be, then, to call into question the popularly received opinion of the unity or the one-ness of the frontier line at any given time, and to seek for reliable answers to significant emerging queries. In developing the enquiry recourse will be had principally to cartographical evidence. The Walker maps will be re-examined with critical scrutiny in the attempt to see if data are present in them which Walker's own eye failed to detect or observe. Other map productions, likely to be of use for the purpose, will also be studied. It is believed that the conclusions to be drawn as the researches un-

[11] Reprinted in Turner, *The Frontier in American History*, 39–66.

[12] *Ibid.*, 43.

[13] Edward Channing, *A History of the United States*, 1: 510–511 and map at the end of volume 2; E. K. Avery, *History of the United States and Its People*, 2: 398; and Lois Kimball Matthews, *Expansion of New England*, 56–57, 70; and contemporary map showing conditions at the close of King Philip's War in William Hubbard, *Narrative of the Troubles with the Indians in New England* (Boston, 1677).

[14] Turner, *The Frontier in American History*, 47.

fold will at the least have the merit of challenge and stimulus for open minds.

Settled Areas and Frontier Lines, 1625–1790. The Walker doctrine of the one-ness of the frontier dominated Turner's mind at the outset of his career. Walker's maps went back no further than for the year 1790. The colonial period was unsupplied with maps to show the distribution of the population; yet in 1893 Turner had to make observations of one kind or another on the assumed pre-1790 frontiers. What he apparently did was to assume that the post-1790 conditions obtained prior to that date, and so inferred for earlier periods a time series of single, continuous frontiers extending from north to south. By an act of pure assumption, then, he created these earlier frontiers, assuming likewise that each individual frontier was single and continuous, like its fellows. The act of assumption was plausible (if one follows Walker that the 1790 and later frontiers were always continuous, and were always no more than one, at any given time).

The test would come when maps of the distribution of the actual pre-1790 populations should be created. The first of these was published by Edward Channing in 1905, the second and third, for 1760 and 1790, by the same author, in 1908 and 1912. Although Turner knew and used these, they did not serve to shake his reliance on or acceptance of his by now well-settled view of the one-ness of the frontier. He continued to think of "the frontier" and of "the settled area." One possible exception to this statement has been noted above, when in 1914, writing of the Atlantic slope in the earlier seventeenth century, he referred to "the settled portions of the Atlantic coast." The use of the plural is perhaps suggestive, especially so if one recollects that the usage occurs after the Channing maps had appeared, and after he had himself worked over the Massachusetts Bay frontier problems, as well as the Southern frontier problems. His mind was responding to advanced studies among the sources, or so it would seem. Nevertheless he continued to cling to the term and the concept, "the frontier," even when he referred to "settled portions." To go on to refer to "the frontiers" of "the settled portions" was a step he did not now take. But how near he came to taking it!

The validity of Turner's proposition is now called into question. To lend aid in the investigation we have several maps relating to early American history which have been prepared under scholarly auspices. If, before 1790, at any given time for which maps are available, the frontier is continuous and is "one," the maps should make the facts clear. The assumption must square with the details of historical cartography, or be dismissed as unproved.

In subjecting the proposition to the testing process, the procedure to be followed will be to examine the maps of the early settled areas for light as to the existence of one, or more than one, frontier. Available for the test are two sets of maps, independently prepared. If both sets reveal the existence of "one" frontier, then we have two independent confirmations of the validity of Turner's proposition. On the other hand, if both sets of maps show the existence of more than one frontier, then we are in possession of two independent bodies of evidence that fail to corroborate the truth of the proposition.

The Maps in Edward Channing's History: The earlier and shorter series of maps, and also the set that is cartographically less complex, is found in Edward Channing's *History of the United States.* The series consists of three maps. In this series the first map relates to the year 1660; the second, to the year 1760; and the third, to the year 1790. The first was prepared under the direction of Lois Kimball Mathews; the second, under the direction of Marion F. Lansing; and the third, under the direction of J. R. H. Moore. The dates of publication of the three are, respectively, 1905, 1908, and 1912. We are nowhere informed as to the method by which these maps were constructed.

We shall commence our study by consulting the Channing series of maps, and shall examine first "The Colonies in 1660 Showing Extent of Settlement."[15]

Consultation yields these results: In the Chesapeake bay area we observe a series of small patches of population, and three outlying or separated or discrete nuclei of population, as follows: Kent Island and the Providence nuclei, on the Eastern and on the Western Shores respectively, of Maryland; and the Accomac nucleus of the Eastern Shore of Virginia. Small patches of population extend from Calvert County, Maryland, on the north to lower Norfolk County, Virginia, on the south. The settlements within these patches extend

[15] The map measures 6½ by 9½ inches and faces p. 510 in volume 1 of Edward Channing, *A History of the United States* (New York, 1905).

along the lines of the lower James, Pamunky, Rappahannock, Potomac, and Patuxent rivers. These Western Shore settled areas communicated with each other by water. Each fronted on the Bay waters and each was hemmed in by the wilderness. This complex of settled areas, together with the three discrete nuclei of population listed, forms a plurality of settled areas. Since each of these settled areas possesses a frontier line, where it is bounded by or ringed about by the wilderness, there necessarily exists a plurality of frontier lines. These frontier lines are of varying lengths, some being more extended than others.

The Delaware Valley possesses three discrete settled areas: isolated Swaanendael; a discrete group of communities located on the lower Delaware River, extending from Hagger Udden on the south to Fort Nassau and Tinicum on the north; and a third discrete group of communities, the Tacony-Assiungh-Sanckhickan group. Here, in the Delaware Valley, then, we have a plurality of settled areas and a plurality of corresponding frontiers.

The Hudson Valley, as examination of the map shows, is composed of a trinity of settled areas, each one being discrete in relation to the other. These are: the New York bay area, comprising both banks of the lower Hudson River, Manhattan Island, and the westernmost part of Long Island; the Esopus-Katskil area; and the Fort Orange-Rensselaerwyck area. Again the pattern of a plurality of settled areas and a plurality of corresponding frontiers is observable. Wilderness, or wilderness and seacoast linked, hem in all these several communities.

Eastward of the Hudson River various discrete settled areas are to be observed. Along the Sound, from the neighborhood of Greenwich past Stratford and New Haven, an unbroken belt or population continuum of Connecticut towns extended to Saybrook. On Long Island two discrete settled areas harbored Yankee residents, one in the Brookhaven district, another at the extreme eastern end of the Island. Separated from the Sound-based settlements were two distinct settled areas, both on the line of the Connecticut River. Closer to the coast was the district in which Hartford and Wethersfield formed principal towns; higher up the river lay a second settled area within which were comprised Hadley, Westfield, and Springfield. About midway between the Hadley-Springfield settled area, and the Boston Bay settlements, was situated the isolated populational nucleus of Brookfield, a discrete settlement with a corresponding frontier plainly manifested.

Eastward of the population continuum that ended at Saybrook there is an unsettled tract along the Sound's edge for some miles. Then another discrete settled area begins, within which were included New London and Norwich on the Thames, and nearby, Stonington. This settled area was fronted by or based on the Sound, but was bordered on three sides by a wilderness frontier.

Beyond the wilderness frontier there lay, still farther to the eastward, a large and territorially extensive population continuum. Within this were much (though not all) of the Narragansett Bay settlements and some of the west-central portions of Rhode Island; much of southeastern Massachusetts and the western third of Cape Cod; Plymouth Bay, the South Shore towns, Boston Bay and a western extension running out to Sudbury, Concord, and Billerica; then the North Shore towns and beyond them an unbroken belt running northward past Newbury, Hampton, Kittery, and York to Saco and Falmouth. Here on the north this continuum ended, thus stretching from Rhode Island to Maine. Outside its limits were several discrete nuclei: the Groton-Lancaster nucleus; the Brookfield nucleus, already referred to; the two island settlements of Martha's Vineyard and Nantucket; the Eastham settlement well out on Cape Cod; and two other discrete settled areas beyond Saco-Falmouth, Saint Georges on Penobscot Bay, and several other settlements between Yarmouth and Damariscotta on the Maine coast.

Surveying the extent of settlement as it was in 1660 according to this map, then, we observe various populational nuclei; several settled areas of a larger size than nuclei; and two population continuua of unequal size but of marked impressiveness: the Falmouth-Boston-Plymouth-Providence-Newport belt, and the Greenwich-New Haven-Saybrook belt.

Each of these settled areas, large or small, has its own frontier. As the map shows a plurality of discrete settled areas, so it shows a plurality of frontiers. Plainly, it is impossible to talk of "the frontier line of 1660." If the map represents the contemporary reality in true fashion, then it is possible to speak only of the specific frontier lines that ringed in the specific settlements at this time: the Delaware Valley frontiers, the Hudson Valley

frontiers, the Maine coast frontiers, etc. There could be no one frontier line in 1660 because there was no one population continuum at that time.

Next we come to the map with the legend, "The Colonies in 1760 Showing Extent of Settlement."[16] Study of this map quickly shows that by 1760 two principal population continuua had come into being. The smaller of the two was located in the south, and took in portions of Georgia and South Carolina. At the coast the continuum extended from Frederica on the south to a little beyond Kingston on the north. Savannah, Charleston, and Georgetown were comprehended within this settled area. Out from it into the interior there extended fingers of settlement along the river valleys of the Savannah, the Santee and Wateree, and the Pedee. Thus this continuum, which was Atlantic-based, extended into the interior as far as Augusta on the south and Camden on the north. The frontier that hemmed it in traced a sinuous, curvilinear course, from coast to interior and back to coast again.

Beyond and outside of this settled area lay various populational nuclei in the interior, discrete: Orangeburg, Old Congaree Fort, Ninety-Six, Fort Prince George. More remote still were such interior, discrete nuclei as Charlottesburgh and Salisbury. Such nuclei, discrete and wilderness-encompassed, possessed each one of them a corresponding frontier.

In the Wachovia area of interior North Carolina was located another discrete settled area, too large to be taken for a nucleus, yet plainly detached from the major continuum that lay to the eastward and northward.

The major populational continuum extended in a quite unbroken fashion from Cape Fear and the Wilmington district of North Carolina at the south to York, Saco, and Standish in Maine at the north. Almost everywhere this immense (relative to the Savannah-Charleston-Georgetown continuum) settlement body was Atlantic-based, extending directly from the salt waters into the interior. Here and there within the continuum unsettled districts were to be found: central and south inner Jersey; e.g., the inner district of the Delmarva peninsula; an empty pocket west of Worcester, Massachusetts, etc. From the coast out into the interior almost a dozen projections and fingers of settlement extended, usually by the courses of rivers, more rarely along mountain troughs. The frontier line that bounded this major population continuum was necessarily extended in mileage, and tortuous in its courses. It took its origin on the seacoast, ran into the interior both near and far, and then came back to the coast again. A scrutiny of its trace on the map itself is better than an attempt at a literary description, though such an one could be attempted. Outside and beyond this frontier line various discrete nuclei were to be found: military sites such as Station Point in Pennsylvania, or Fort Edward and Fort William Henry in New York; trading posts such as Oswego, and in New Hampshire, Centre Harbor. In Maine, on the coast was a discrete settled area, within which were Durham, Augusta, Gardiner and Damariscotta. Such is the size of this last Atlantic-based settled area that it could perhaps be thought of as a third, even if minor, continuum.

Thus the districts and the parts of the settled areas as they were in 1760 have been passed in review. Observable and observed were populational nuclei, and population continuua, major and minor. Of settled areas, discrete and continuous, there is a plurality, and so, of frontier lines, likewise a plurality. As yet there was no unbroken continuum, running the length of the coast line, extending solidly into the interior, and hemmed in everywhere by a frontier line that corresponds to it. As yet there was no one frontier, certainly not in 1760. The existing frontier lines, it may be remarked upon, are of different lengths, major lines and minor ones.

The third and last map in the Channing series carries the legend: "The United States in 1790 Showing the Extent of Settlement at the Time of the Beginning of Government under the Constitution."[17]

By this date a population continuum that extends from Georgia to Maine has been created. This major settled area is Atlantic-based from the Saint Mary's River in Georgia on the south, to Quoddy Road on the coast of Maine at the north, with the single exception of a small untenanted district on the North Carolina coast lying south and west of Cape Fear. Everywhere else, settlement commences at the coast line and extends into

[16] The map measures $14\frac{3}{16}$ by $15\frac{3}{16}$ inches and it is tipped in at the end of volume 2 of Edward Channing, *A History of the United States* (New York, 1908).

[17] The map measures 15 by $15\frac{1}{4}$ inches. It faces p. 528 in volume 3 of Edward Channing, *A History of the United States* (New York, 1912).

the interior. The major frontier line that encloses this major populational continuum can be traced with comparative ease as follows: it starts at the Saint Mary's, near the coast, runs into the interior in a generally northwesterly direction till it crosses the valley of the Holston River in East Tennessee. It then trends northeasterly till it reaches the valley of the Kanawha, down which it goes almost to that river's mouth. From the Kanawha it runs northward through Virginia, taking in a small segment of eastern Ohio. From Logstown, Pennsylvania, the frontier line extends in an easterly, northeasterly, and northerly direction, except for a massive projection up the Susquehanna River and its upper extension almost to the New York line. On attaining the upper Delaware Valley, the frontier line with a major curve goes northward, takes in the Mohawk Valley, swings east once more, then north, enclosing the Champlain basin on the west, as far north as the Canadian boundary. From the lake it moves eastward across northern New England till first it nears the Maine coast and then attains it at the mouth of the Saint Croix River, near Quoddy Bay.

In relation to this major settled area are several minor settled areas, each one discrete in regard to the other minor settled areas, and also in regard to the major Atlantic-based area: the Oswego nuclear settlement; the Cooperstown nucleus, and the Geneseo nucleus, all three in New York; the Marietta and the Cincinnati districts in Ohio; a nuclear settlement at the mouth of the Kanawha River; the Bluegrass area of Central Kentucky, also a nuclear settlement east of it and yet south of the Ohio; and the Nashville area settlements. Farther west are to be seen additional small settled districts: The Natchez, the Alabama-Tombigbee confluence area, the Massac, Fort Vincennes, Fort Chartres - Kaskaskia, Cahokia, Peoria, Prairie du Chien, Green Bay, Detroit, and Michilimackinac. That these discrete, minor settled areas are "frontier" areas is well known. The Kentucky settlements, to take but a single instance, were surrounded by Indian country; hence their social organization, at this time, pretty much partook of the nature of communities bound together by a sense of "the people in arms."

This survey of the series of maps in Edward Channing's *History* establishes without fear of contradiction, it is thought, the conclusion that during the period 1660–1790 there was in existence a plurality of settled areas, major and minor, with a plurality of corresponding frontier lines. These findings destroy the notion of the "one-ness" of the frontier during the years covered by these maps.

Before leaving these Channing maps, the opportunity may be improved to call attention to Turner's comments on the first two of them. The comments are incorporated in one of the footnote belonging to "The Old West," first printed early in 1909. Turner refers to the map of the settled area in 1660, and also remarks: "In Channing, ii, following p. 603, is Marion F. Lansing's map of settlement in 1760, which is on a rather conservative basis, especially the part showing the interor of the Carolinas."[18]

Turner sent a separate of "The Old West" to Professor Edward Channing, who replied from Cambridge, Massachusetts on March 19, 1909. Channing sent thanks and continued: "I notice with pleasure that you seem to have used the two maps showing the settled areas in volume I and II. You speak of that of 1760 as being 'conservative,' as to the interior of Carolina. I wonder if you ever tried to draw a similar map of the region south of Virginia, because I can assure you it is an extremely ticklish operation. Otherwise, I may say that I have tried invariably to err on the side of conservatism believing that it is better to draw the lines too far east than too far west. I am now at work, with an assistant, on the maps of 1775, 1790, and 1800, . . . " Channing thought this work was justifiable, but expensive in time and money. He concluded by saying that he felt tempted to omit the maps. As a matter of fact, he never did get round to publishing the proposed map for 1800.

In 1914, when he published his article "Frontier in American Development," Turner wrote: "For the colonial era, Professor Edward Channing, in his *History of the United States*, supplies maps showing approximately the settled area in 1660, 1700, and 1760."[19]

Maps of Charles O. Paullin: The Atlas of the Historical Geography of the United States by Charles O. Paullin, published in 1932, contains a series of five maps grouped together under the general heading of Settlement and Population, 1660–1790,

[18] Turner, *The Frontier in American History*, 68, note 2.

[19] Turner, in *Cyclopedia of American Government*, 2: 61.

which series forms plate 60.[20] The particular titles of these five maps are: settled areas and population, 1660; settled areas and population, 1700; settled areas, 1760, and population, 1750; settled areas and population, 1775; and settled areas and population, 1790. The text matter which discusses these maps conveys the information that the settled areas of 1660, 1700, 1760, 1775, and 1790 are derived from a map prepared under the direction of T. R. H. Moore and published in Edward Channing, *A History of the United States*, volume 3, page 528.

The populations for the several colonies as shown for 1660, 1700, 1750, and 1775, and of the several States for 1790, are depicted by symbols which represent globes. The relative sizes of the globes differ, being proportioned to the estimated populations. Franklin B. Dexter, *Estimates of Population in the American Colonies* (1888) is the source of the population statistics.

Dr. Paullin concluded his discussion of the maps shown on plate 60 with these remarks: "Although census figures by townships and counties exist for several of the colonies for different dates . . . they are scattered, often inaccurate, and not comparable. It would, therefore, be impossible to construct for all the colonies a series of uniform maps similar to those based on the United States Census reports for 1790–1930 . . . showing in detail the density of population."[21]

Maps of Herman R. Friis: The more recent and longer series of maps, and also the set that is cartographically the more complex, is the work of Herman R. Friis. This series consists of ten maps, which refer to the following years: 1625, 1650, 1675, 1700, 1720, 1740, 1760, 1770, 1780, and 1790. They appear with text in an article by Friis entitled "A Series of Population Maps of the Colonies and the United States, 1625–1790" in the *Geographical Review*, 30: 463–470 (July 1940) and also in the same author's more extensive study with the same title that was issued in mimeographed form by the American Geographical Society, which includes comprehensive bibliographical references and additional maps.

The first map in the Friis series is for the year 1625. On this and the other maps in the same series each dot, we are told "represents approximately 200 rural inhabitants," and each circle "represents one or more families."

Starting with coastal Georgia and working northward through North Carolina we find that within this geographical area there are no white inhabitants; there is thus a continuous unsettled area. Next comes Virginia. Along the James River Valley are dots and, at the west end of this river valley, are two circles. Here is a long, narrow settled area, a small population continuum, as it were, bounded by the wilderness on three sides, and by the estuary of the lower James on the fourth. To use familiar terms, we have a settled area and its corresponding frontier.

Now we cross the Chesapeake Bay and come to the Eastern Shore. These Accomac settlements, collectively considered, are separated, or discrete, or isolated, being ringed round by wilderness and waters. Along this shore, and near the tip are five dots; then comes an unsettled area, and at the cape of the Eastern Shore is a circle. These Eastern Shore settlements may be thought of as another discrete settlement continuum, with its corresponding frontier. Or, alternatively, we may think of the entire complex (James River Valley plus the Eastern Shore) as one "watery world," the waters of the Bay giving unity of access and approach each to each other. Viewed from one angle, then, we find two settled areas and two frontiers; from another, one unified yet deployed settled area and one broken frontier.

Maryland and Delaware are empty of souls at this year.

In the Delaware Valley, on the Jersey shore below the future site of Philadelphia, we see a solitary dot, a settlement nucleus, the untenanted wilderness ringing it about. A tiny settlement and —its short frontier.

At New York Bay are two dots, on the southern extremity of Manhattan Island and on the western

[20] Charles O. Paullin, *Atlas of the Historical Geography of the United States*, edited by John K. Wright (New York, 1932). Students will also find of interest Evarts B. Greene and Virginia D. Harrington, *American Population Before the Federal Census of 1790* (New York, 1932), and Stella H. Sutherland, *Population Distribution in Colonial America* (New York, 1936). Of particular interest in the latter volume are the three large plates, "Population Map of New England and New York, 1771–76," "Population Map of the Middle Colonies, Virginia, and Maryland, 1778–87," and "Population Map of the Carolinas and Georgia, 1775," facing pages 62, 158, and 222 respectively.

[21] Paullin, *Atlas of the Historical Geography of the United States*, 41. Since these maps are ultimately based on Channing's maps, they add nothing more to the discussion.

extremity of Long Island. The nuclei are separated by the waters of the bay. It is the pattern of the Chesapeake settlements repeated on a much smaller scale, and we may see in it, again, one settlement in two parts, or two settlements; and therefore, either one frontier or two.

Connecticut and Rhode Island are bare of souls.

Coming to Massachusetts, we note a circle at the opening of Buzzard's Bay; and three dots within the bounds of Plymouth plantation, all located on the western shore of Massachusetts Bay. These three settlements perhaps form a continuum, but between this continuum (if it be such) and the Buzzard's Bay nucleus there certainly exists an unsettled area. Plymouth's three nuclei are bounded by the sea and the forest, which runs north to Boston Bay.

Starting in the vicinity of Boston Bay and proceeding northeastward we count four dots between Shawmut and Cape Ann's end. These North Shore settlements, taken collectively, may be viewed as a settled area, with one frontier; or, alternatively, as four settled areas, each bounded by sea and forest. The latter view is preferable.

Beyond Cape Ann are the scattered settlements of New Hampshire, two at the mouth of the Piscataqua, and one upstream. Upstream a circle, midway a dot, and at the river's mouth a circle. A waterway unites for egress and ingress, while a wilderness separates and encloses. Perhaps one frontier, more likely two at least; and possibly, even three.

Down east within the borders of Maine, along the beaches, bays, inlets and coves we see a definite discontinuity: ten circles in all. Ten nuclei, then, each within ken of salt water, each walled in by forest solitudes, by frontiers.

Counting one way or another way, the tallies may differ. If one takes into consideration the nonexistence of roads, the paucity of traces or trails at this early time, the prevalence of Indians, and the all but universal tendency to travel from settlement to settlement by water—canoe, skiff, barge, sloop, or what not—it seems inescapably a sound conclusion that the total which arrives at the largest, rather than at the smallest figure, is likely to reflect most truthfully the contemporary realities. The Atlantic seaboard was then composed (we speak of the future English America exclusively) of a plurality of settled areas and of a corresponding plurality of frontiers. These settled areas were sometimes remote from neighbors, sometimes less than remote. But there existed no one settlement continuum, and no one connected, extended frontier.

The settled areas and frontier lines in 1650. By this year the total configuration on the map shows clear development. The waters of the Chesapeake and the rivers leading away from it unite numbers of settlements, a true "watery world." Most of the population resides on the western shores of Virginia and Maryland, but the eastern shores have some residents, high up the Bay (Kent Island?) and at Accomac. Separated nuclei, these are of varying sizes, and have their corresponding frontiers. The Chesapeake complex is shut off from the still rudimentary lower Delaware Valley complex by a wilderness. The Delaware Valley nuclei are six in number, but can perhaps be grouped into two divisions, an upper and a lower. The river unites; the wilderness divides. We shall be soundest if we think of the current situation in terms of several settled areas and several frontiers rather than one and one. The lower New York Bay area, comprising the few Jersey Shore nuclei, Manhattan, and the western Long Island settlements, begins to come together, the bay waters and tributaries uniting, the encompassing wilderness dividing. Distances count for much, even though the mileages by modern standards are inconsiderable. The Albany area is a focus of nuclei, separated by wilderness from another complex of hamlets on the river about midway on the route to New Amsterdam. Here plainly are discrete nuclei and several individualised frontiers.

Connecticut's showing is interesting. Along the Sound, one sees a series of nuclei, extending from the New York border to the Rhode Island border, with the wilderness behind them and the salt water at their doorsteps. This littoral series is probably a series of discontinuities, everywhere, except in the region of New Haven Bay, where an evident cluster has formed. Separated from the closest settlements on the Sound are the nuclei that ring round Hartford, the chief of the up-river towns of interior Connecticut. So in this corner of New England, too, we see frontiers and discontinuities of settlement.

On the eastward stretches wilderness almost as far as Narraganssett Bay. Here is another nucleus, a cluster of settlements facing the broad bay, or surrounded by it; these settlements are in turn shut in by the wilderness.

Over the boundary line are two separated Massa-

chusetts nuclei, dots in the wilderness. Then farther to the eastward a string of settlements extending from the eastern shore of Buzzards Bay northward across the base of Cape Cod, and so connecting (almost) with the Plymouth nucleus proper. Thence a line of settlements along the South Shore till the vicinage of Boston Bay is reached. Here we observe the densest complex of settlement of any thus far seen, with a minor nucleus not far off on the North Shore. But distance still counts for much in these days of toilsome travel. Travel by sea hints at the power, the dangers, of the endless forest. It will be best to think of discontinuities between the settled areas on the Massachusetts coast of 1650, even though the intervening distances tend to be somewhat reduced. In Essex County a series of settlements runs northward to the New Hampshire line. Beyond that line other nuclei trend eastward into Maine along the coast, and northward into New Hampshire, edging into the interior, broken settled areas, disconnected frontiers . . . . In a word, a plurality of settled areas from Virginia to Maine, and a plurality of frontiers for the same areas.

The settled areas and frontier lines in 1675. A quarter century of growth, rooting the Anglo-Americans well in their territories, is registered on this map.

We take note, in South Carolina, of two nuclei, one larger than the other. That centering in the Charleston area is the larger. Between it and its neighbor to the southward a wilderness intervenes: plainly, then, two nuclei of settlement, two frontiers. Within North Carolina we see another pair of nuclei, one in the Wilmington area, and a second, separated by an immense distance, a scattered complex of discrete settlements fronting on the Albermarle Sound. To the north of these settlements we see an isolated nucleus, a lone dot, the northernmost settled site in the province.

One may count in the Carolinas, then, at least five discrete settled areas, each with its corresponding frontier.

The Chesapeake world shows signs of growth. From the big bend of the Potomac southward along the line of the falls of the rivers to the South Side below the James, a discontinuous series of settlements extends. Moving eastward from this line down the river valleys the settlements thicken, especially in the James Valley. In Maryland a coastal colonizing process is in evidence, for both the Western Shore as far north as the head of the bay, and with an interval here and there, on the Eastern Shore as well. On the Accomac peninsula's outer side ocean-facing settlements multiply. The Chesapeake world is still set off from its neighbors on the south and north. But the time is coming on, if indeed it has not already arrived, when this Chesapeake world, on its "western" borders, will have created a unified, continuous local frontier.

In the Delaware Valley there is to be seen a string of riverine settlements, fewer on the Jersey shore, more numerous on the opposite shore. The latter run down almost to the point where the lower Delaware widens perceptibly. Then comes a wilderness interval, and farther to the south, well within the modern State of Delaware, there is an isolated nucleus. On the western shore of the Delaware River then, we see a series of three discrete settled areas. The largest of the three lies at or near the great bend of the river about opposite Trenton and Burlington. On the eastern or Jersey bank there are five settled areas, each separated from the other. The largest of these West Jersey nuclei is located in the neighborhood of Salem cove, Penn's Grove, etc. Midway between the most northerly Delaware-shore West Jersey settlements and the East Jersey settlements fronting on New York Bay is a nucleus in the upper Raritan Valley. This is the first faint sign of a "filling-in process" that will eventually connect the Delaware Valley settlements with the New York Bay settlements. On the Atlantic shore, situated in south-central Jersey lies an isolated nucleus. Finally, around the shores of New York Bay there has come into existence a semi-circle of Bay- and river-fronting nuclei, the thriving settlements of East New Jersey. Once more, then, to sum up, a plurality of settled areas, discrete, and a plurality of frontiers, none very extensive as to length.

In New York, we see the Long Island wilderness in process of being entered at several places in its central and eastern portions. There are five nuclei, three being on the Sound side of central Long Island. Manhattan Island grows in inhabitants, the Hudson Valley in its uppermost, central, and lower sectors shows at least three nuclei of settlement. Off to the west, away from the river, and closer to the Delaware than to the Hudson, one sees an isolated settlement in southwestern New York. It is indisputable that we have here dis-

crete settled areas, each with its own corresponding frontier.

In Connecticut we observe a thickened belt of population extending along the Sound almost from the New York Bay area to almost the border of Rhode Island. This appears to be a true population continuum, based on the Sound, and fronting on the forests. An untenanted interval separates it from the compact settled area centering in Hartford, an area that is discrete from the settlements on the Sound and from those higher up on the Connecticut River in Massachusetts. These last fall into four separated nuclei, with the central nucleus much the largest. Over the line in extreme southern New Hampshire, near the Connecticut river, we see the most northerly outpost. This is a pattern of discrete or noncontiguous settled areas, each with its corresponding frontier.

Eastern-most Connecticut and western Rhode Island remain bare; a wilderness interval cuts off the Thames Valley settlements from the Narragansett Bay settlements. On the western shore of Narragansett Bay there runs a line of settlements, from south to north; these extend up into the interior some little distance above the head of the bay in the northwest. The Newport area settlements are separated by water, forming thus a true sea-frontiered settled area, as in the case of the West Indian Islands, Nantucket, etc.

The configurations of settlement exhibited by Massachusetts as of this year are several. The lower end of Cape Cod embraces a settled area that is a discrete entity, the Barnstable district. The coast of Bristol County appears to contain another, but much smaller by far. A third may be seen in the neighborhood of such towns as Taunton, Dighton, etc.

These three are, in relation to each other, noncontiguous; between them one sees an irregularly shaped patch of wilderness lands, a frontier.

Another, and this is the most densely populated settlement continuum in New England or in all continental English America at this time, now comes up for attention. This major settled area commences with the South Shore towns on Massachusetts Bay and without a break extends coastwise and parallel therewith north to Boston Bay. Westward from out of the Boston Bay area, the towns radiate like spokes from a hub. On the North Shore another series of settlements runs. Whether this is a continuum of its own, or part of the Boston-centered complex may be left an open question. Sea-based, and forest-enclosed, this northern line of settlements knew what Indian warwhoops meant. Along the Merrimac Valley, before the river curves northward, a non-contiguous nucleus is observable. Coastal New Hampshire is a continuation of the settled area from the North Shore of Massachusetts, as are the more scattered, and increasingly discrete (as one moves farther down East) settlements in the province of Maine.

As of 1675, then, taking the entire map into consideration, we see a plurality of settled areas, and a plurality of corresponding frontiers. It is noteworthy that the Chesapeake Bay settled areas are not yet connected with the Delaware Valley settled areas. These basin communities, so to speak, have not yet built a "population bridge" between them.

The settled areas and frontier lines in 1700. As of this year, the map shows a growing complexity, from one point of view; and, from another, an increasing simplification. The growing complexity is manifested by the appearance of *new* nuclei, non-contiguous in relation to the preexisting ones; some of these new ones are definitely remote from long-established areas. Complexity of a developing kind is also shown by the "thickening" of settlements within such well-defined pre-existing settled areas as the Chesapeake area, the New York Bay area, and the Boston Bay area.

We may now consider the new nuclei, beginning with the south. In South Carolina two nuclei are seen in the Port Royal Sound country and a third not far from the head of the estuary of the Broad River. The tiny nucleus of 1675 in the Saint Helena Sound area has grown slightly; and the slightly larger nucleus centering in Charleston and environs at the same year has now expanded several-fold. In addition thereto, an interior nucleus has formed at a point some distance inland from the sea coast. Within South Carolina we now find, therefore, five separate or discrete settled areas, and an identical number of corresponding frontiers.

In North Carolina, in the area of the Albemarle Sound county is to be seen a moderate "thickening" of the settled area, an extension of the settled area through the establishment of new nuclei on the north shore of the Pamlico River, and again a moderate "thickening" of settlement in the neighborhood of the west shore of the Cape Fear River inlet. North Carolina, therefore, at this time exhibits three discrete settled areas, and

an equal number of frontier lines corresponding thereto.

The Chesapeake Bay area comes next. Its Eastern Shore, from the tip of Cape Charles to the Elk River country shows an unbroken line of settlements. The South Side of Virginia, close to the James River, is almost solidly settled; so are the other river valleys running into the interior. The streamers of settlement have passed beyond the fall line, and like narrow fingers point westward or northwestward. Their total effect is that of an irregular or serrated line. In the upper reaches of the Bay similar serrations are evident. In the Chesapeake world a "thickened," enlarged settled area has come into existence, therefore, with an extensive, highly irregular frontier line.

This Chesapeake world has almost established contact with the Delaware Valley's settled area. But the map does not make the contact an unassailable one. It is best, therefore, for the present, to consider the Chesapeake world as a discrete settlement area, with its corresponding frontier line.

In lower Delaware eight nuclei, coast-bound all of them, can be seen. Where the bay narrows and the river valley proper begins the nuclei come closer together, though still shore-bound. At one point, plainly visible, they hint at a tendency to extend westward into Maryland's lower Elk River country and the districts of the upper Chesapeake With but perhaps a single gap the settlement line follows northward along the river to Philadelphia and its environs and those neighboring settlements still higher up the principal waterway. A wilderness area intervenes for a long distance; then, after this interval a nucleus, well marked, is observable in the vicinity of what is today's Easton, Pennsylvania. This nucleus represents a remote, discrete settlement area, a detached or non-contiguous frontier. On the West New Jersey shore scattered settlements have increased in number. But the nuclei are separated from one another. In the Cape May area a nucleus has appeared. So far, West New Jersey must be thought of as forming part of the Delaware Valley's plurality of settled areas with its plurality of frontiers. As yet, it remains discrete from East New Jersey, for the gap between the two, no matter how often it is traveled, is untenanted, as of this time.

In lower New York Bay there has come into being a "thickened" and expanded settled area, which includes East New Jersey, Staten Island, Manhattan, and environs, the western and even the central parts of Long Island. Up the Hudson a goodly number of non-contiguous, small settled areas are to be seen, and there are, also, several nuclei north and west of the New Jersey-New York boundary. The patterns of settlement are plural, and quite a striking settlement phenomenon has appeared: a settlement continuum that starts vaguely in the middle Thames Valley of eastern Connecticut, descends that river to the Sound, then traces a course westward and southwestward in an unbroken fashion into New York province and Manhattan Island. This continuum is more tightly interdependent than any settled area to the southward of it, and at two points it almost makes contact with two other settled areas: with the settlements centering in the Hartford area which, however, still remain separate, and separate, too, from the discrete Massachusetts series of Springfield, Northampton, etc. And it almost makes contact, a second time, to the eastward of the Thames, with the Narragansett Bay settled area, and its westernmost extension which has run over the line just barely into Connecticut. All in all, therefore, in spite of definite signs of initial consolidation, Connecticut still remains a territory that counts several settled areas and several frontier lines.

One sign of the increasing simplification of the population pattern, to sum up, is indicated by the lower New York settlement continuum. Taking Manhattan Island as the heart of this belt, we note projections and extensions into East New Jersey, western and central Long Island, and the Sound-based towns that run one after another into Connecticut and up the Thames.

Rhode Island is still a small discrete cosmos of its own, centered on its bay. North of Providence, a nucleus points toward the neighboring towns of Massachusetts; to the east of the bay a finger reaches into southwestern Massachusetts. But the contact has not yet been cemented. It is safest to conclude that that Narragansett Bay settled area forms an entity, discrete, with its own frontier line.

Within the border of Massachusetts, we observe additional new nuclei, enlargements of old nuclei, a "thickening" of the Boston Bay settled area, and the consolidation, now indisputable, of the Boston "hub" with spokes radiating out in unbroken fashion southeastward into Cape Cod and north-

ward along the North Shore, toward the towns of coastal New Hampshire and those in western Maine.

On the outside of this consolidated area, now simplified over the previous map, we find several discrete nuclei: some in east-central Massachusetts, some in the Connecticut Valley, a few on the Merrimac, and still others scattering northward along the Maine coast. The primordial nucleus in the Vermont area now appears: A settlement at its extreme southeastern corner on the Connecticut river.

Thus the map of 1700 reveals the presence of new nuclei of settlement, the expansion of old ones, the "thickening" of already well-settled areas, and the consolidation of at least two of these, resulting in a tendency toward partial simplification. As a consequence, the map of 1700 also reveals the existence of a plurality of settled areas, and a plurality of corresponding frontier lines.

If we may count the years 1607–1700 roughly as a century, then it is apparent that as a result of immigration from overseas and of natural increase at home, massive accomplishments in the nature of territorial occupation have been carried out. These were directed by no unified headship, but were undertaken as particular, discrete projects. The insularity, the localism, of the several Atlantic coast communities long after 1700 is notorious. Hence, insistence upon the pluralism of the forces at work, upon the pluralism of the social products. In a word, the several groups of settlers inhabited islands on the land, so to speak.

The settled areas and frontier lines in 1720.

Georgia is bare of souls at this time. In South Carolina there are now five discrete foci of settlement. Four are Atlantic-based, one is in the interior. The Charleston area is the largest. Three are nuclear, the mere beginnings of communities. In North Carolina the two nuclei in the Sound country of the northeast have now grown toward each other so that a narrow, sinuous continuum has come into being. South of this, and separated from it, as well as from the seacoast, is another nucleus; while far to the south, on the coast, is the last of the North Carolina nuclei.

The Chesapeake world shows expansion along the river courses toward the interior, and expansion in the South Side district. The Western Shore of Maryland is showing signs of increased density of population and the same is true of the Eastern Shore. Notable is the fact that as of this year an unmistakable connection has been formed between the uppermost Chesapeake Bay settlements and the southeastern Pennsylvania settlements. At last an unmistakable continuum has been brought into being which unites and combines the Delaware and the Chesapeake worlds. The connecting bond joins Maryland settlements on the lower Susquehanna with Pennsylvania settlements higher up on the same river. This linkage between the maturing settled areas to form one enlarged continuum is a momentous development in the process we are tracing for the Atlantic Coast area.

Southeastern Pennsylvania has increased in density round about Philadelphia; it has also expanded, sending out fingers to the westward and to the northwestward. The central upper Delaware Valley has somewhat grown; it is still a discrete settled area, however, with its own frontier. The Delaware River's western shore is a southern projection of the Philadelphian areas, as to settlements. And its eastern shore, from about Trenton southward, all but to Cape May, is still another finger projecting outward from the Philadelphia center.

From the South Side of Virginia to the eastern bank of the Delaware, then, there has come into being, as of this year, one impressive population continuum, possessing one highly elongated sinuous frontier line. Beyond the frontier that bounds this population continuum, everywhere based on salt water, are to be seen numbers of discrete settled areas of one size or another, ranging from the nuclear to the small clustered settlement. Each of these discrete settled areas has its own frontier.

The town of Philadelphia is important within this combined settlement continuum, because it is *the density climax*, so to speak, the focus of highest density of population, within this continuum.

This enlarged continuum is about ready now to form a connection with the New York Bay area. Perhaps the connection has just been formed. But the map seemingly does not yet firmly establish the fact of junction.

East New Jersey's settlements have expanded south of Sandy Hook, and also along the shores of Raritan Bay west of New York Bay. The western end of Long Island has grown distinctly denser in its population; so too, has the central portion of this island. Manhattan island has "thickened" its population. The line of the Hudson Valley settlements is all but continuous from Albany

southward almost to the sector of the lower Hudson. This riverine projection remains therefore, a discrete settled area, with its own frontier. Off to the west and to the southwest of it lie several nuclei of settlement, each with its own frontier.

Eastward from Manhattan along the Sound there extends in unbroken fashion a "settlement isthmus," which unites the lower New York Bay settled area with the major part of the settled areas of Connecticut, which now comprises the Sound-based settlements and settlements extending up the Connecticut river into the Springfield, Massachusetts, area. Outside of this New York-Connecticut continuum lie several discrete nuclei, chiefly in northwestern and northeastern Connecticut, and running northward from the continuum are two "fingers," extending toward south-central Massachusetts. From the New London area eastward a thin belt of localities connects with the now increasingly "thickened" area of southern and southwestern Rhode Island. Newport has developed into a genuine density "climax," a focus of high density, comparatively speaking. Beyond it to the north and to the eastward are extensions that almost make contact with the settled areas of the Old Colony and the South Shore of Massachusetts Bay. But these junctions or contacts have not yet been unmistakably formed. Rhode Island at this time, thus forms the easternmost extension, as the Springfield area of Massachusetts forms the northernmost extension) of the lower New York–New Haven–New London–Newport sea-based continuum.

From the lower end of Cape Cod on the southeast, following along the shore line of the Old Colony and along the South Shore an unbroken line of settlements runs toward Massachusetts Bay. These grow denser as they approach Boston and its environs. Boston is the most densely populated focus within this continuum. It is the density climax of the continuum. Between Boston and the Hatfield-Northampton area of the Connecticut River Valley a discontinuity is evident. Discrete, too, are the Greenfield–Deerfield nucleus, the Northampton nucleus, and several other nuclei between the Connecticut River and Boston Bay; these nuclei are of varying sizes. Northward on the coast a settled belt runs along the shores of Massachusetts, New Hampshire, and extreme southern Maine. In New Hampshire are the matured beginnings of "thrusts" up the river valleys into the interior. On the Maine coast the settlements taper off from a connected thin but settled belt into discrete nuclei, becoming progressively smaller in size as one moves eastward.

As of this year, 1720, then, we observe a plurality of settled areas and their corresponding frontiers. The principal developments to be noted are a marked thickening in some areas, a marked expansion in others, and a consolidation into one enlarged settled area of the formerly disjunctive Chesapeake and Delaware settled areas. Also, the well-marked union of much of Connecticut and Rhode Island with the lower New York settled area.

The settled areas and frontier lines in 1740. On the Georgia coast are now six discrete nuclei of settlement; of these the Savannah focus is the largest. Up the Savannah River are two additional nuclei, one far in the interior, the other almost midway between the one most remote from the coast and the Savannah area. South Carolina shows numerous signs of new expansion and also of increasing density in areas earlier occupied. A discrete settled area is to be seen on the extreme southern coast of South Carolina. Farther eastward along this coast we observe the beginning of a small-sized population continuum with "a density climax" seated in the Charleston area; from this there extends, up river, a finger of settlement which at its end forks into two thin wedges in the interior. Still farther to the eastward, and based on embayments opening into the sea we observe two separate coastal nuclei, of unequal size. From the more northerly of these two a riverine projection runs into the interior, with several filiations or slender lines of settlement, seemingly here and there discontinuous, in relation to the Atlantic-based settlements. One of these travels up into interior central North Carolina.

Considering Georgia and South Carolina together, therefore, the generalization may be offered that their combined total areas exhibit a plurality of settled areas (the majority being Atlantic-based) and a plurality of frontiers. The density climax is attained in the Charleston area.

Crossing into North Carolina a discrete settled area, Atlantic-based, is seen in southeastern North Carolina. This narrow settled area extends into the back country, then forks into two fingers of settlement when in from the coast but a short distance. This coastal discrete settled area may be paired off with a second North Carolina discrete settled area, which latter fills, in narrow fashion,

the lower course of the Neuse River Valley. A broad wilderness separates this Neuse district on the southwest and on the south from the settled area just mentioned; while on the north, it is cut off along its entire length by a narrower wilderness zone stretching along and below the settlements in the lower and the middle courses of the Pamlico and Tar rivers. Thus far, then, North Carolina has two coastal discrete, settled areas, each with its corresponding frontier.

Proceeding northward along the coast, attention may be directed to the Sound-based settlements at and near the mouth of the Pamlico river. At the mouth of that river, where it widens out into the waters of Pamlico Sound, lines of settlements are seen on both banks. Following up the course of the stream an unbroken line of settlements may be traced into the interior. At length these Pamlico-Tar river settlements join in the interior with those on the upper Roanoke River; still farther inland, the North Carolina settlements blend into and join with those Virginia settlements that are plainly linked with those which run northward to or run southward from the Valley of the James.

Thus the upper or northern portion of the settled area of North Carolina has become continuous with the Chesapeake world, a population phenomenon that appears on this series of maps now for the first time. This is a notable development. It is plain that the junction is effected in the interior, and not on the seacoast, for extreme northeastern North Carolina, a coastal area, is still unpopulated. This unpopulated area, by the way, abuts upon the adjoining parts of Virginia which are also unpopulated, till within a short distance from the area of Norfolk and its environs.

Thus a still more enlarged population continuum has evolved, now a truly impressive, much extended settled area, stretching from North Carolina's Pamlico River mouth at one extremity, to the coast of Maine on the other. Within this multiple-compounded continuum lie four major density climaxes, which come in geographical order, thus: Boston, Newport, New York and Philadelphia. The future rise of Baltimore may be foreseen by a marked cluster on the Western Shore of Maryland. And just as the concentration of the populations may be seen in such striking cases (to name but a few) as in eastern Massachusetts, southern Rhode Island, the Hartford and the New Haven areas, the lower Delaware River and the line of the James Valley between Richmond and the port of Norfolk, so the evident sparseness of population on, at, or near several coastal areas can be plainly observed, thus: in the central portion of the Delaware peninsula, in central and southern New Jersey, in easternmost Long Island, and in the area bounded on the north by the lower James, on the east by the Atlantic, and on the south by the Albemarle Sound settlement line.

This unified population continuum can easily be conceived of as being enclosed within its own continuous frontier, the longest one yet seen, the major frontier line.

But outside of this major frontier line, draw it where and how one will, as to details, there yet remain numerous discrete settled areas that by no stretch of the mind can be thought of as forming integrated parts of the major population continuum. Instances of these discrete settled areas are supplied thus: the coastal settlements in extreme eastern Maine; Oswego on Lake Ontario; the cluster of nuclei on the upper Mohawk; the broken line, of back-country settlements along the Valley of Virginia; and other nuclei along the sector of the Upper Potomac and the streams that drain northward into it.

It is necessary to conclude, therefore, that in 1740, there existed a plurality of settled areas and a corresponding plurality of frontiers. These settled areas were of many different sizes, and these frontier lines of many different lengths. Within the major settled area as of this date, various unoccupied or relatively unoccupied tracts are to be seen. The point may be made, in passing, that only in theory, at this moment in time, may this entire continuum be spoken of as an Atlantic-based continuum. The settlements composing it do not in every case go down to the water's edge. A glance at the map makes this point clear and saves citation of instances. But in time to come, the seaboard will be filled in from end to end, from south to north.

One final point calls for comment before passing from the map of 1740. This is to call attention to the marked widening of the "settlement isthmus" across central New Jersey between lower New York bay and the bend in the Delaware Valley, a development which has taken place since 1720.

The settled areas and frontier lines in 1760. The major settlement continuum now extends from southwestern coastal Maine to southwestern coastal North Carolina. The connections that have been established to bring about this major entity

are interior ones south of the James, coastal littoral ones from Maine to lower New York bay and environs, and a combination of coastal with interior ones, varying from sector to sector, on the axis: Lower New York bay to the line of the James.

Wherever one may draw the frontier line that shall ring about this major settled area, it is clear that there will be found, outside and beyond it, several nuclear areas and also some moderate-sized settled areas. These discrete settled areas do not call for enumeration in a systematic way. Two of them may, however, be singled out for special mention: (1) the extended discrete area with its population density climax located at Charleston. This settled area, however irregular in pattern, is now seemingly a true population continuum, with extensions running northwestward and northward over the border into central North Carolina; (2) the emergent continuum along the Savannah River from the interior to the sea. If this be indeed a true continuum, then it, like the undoubted continuum in South Carolina, is discrete from its neighbor, as its neighbor in turn is discrete in relation to the major settled area farther north.

Charleston, Philadelphia, New York, Hartford, Newport, Providence, Boston, and Salem stand forth as climax foci of population. As yet, the strand is untenanted in more than one sector.

A plurality of settled areas and a plurality of corresponding frontiers exist, as of this year, 1760.

The Settled areas and frontier lines, in 1770. The line of the Savannah River may now be taken incontrovertibly as a true population continuum, and it has, along its upper reaches, established significant contact with the Charleston-based South Carolina continuum. Although this latter one is expanding outward in more than one direction, it has not yet expanded sufficiently to effect an unmistakable junction with the massive population continuum to the north. For the present, then, Georgia–South Carolina–central interior North Carolina, form a minor, a lesser population continuum, discrete from the major continuum to the northward and enclosed by its own corresponding frontier line.

Outside of these two major settled areas, unequal in size and discrete in relation to one another, there are now many discrete nuclear settled areas, north, west, and south; some of them are relatively remote from, others relatively close to, the major settled area. Thus a plurality of settled areas and a plurality of corresponding frontiers is still to be seen.

The settled areas and frontier lines in 1780. Study of the map of 1780 shows that by this year one and only one major population continuum has come into being. This major continuum extends from Georgia on the south to New England on the north. At nearly every point this population continuum is Atlantic-based, that is, it extends into the interior from the saltwater. The exceptions to this statement are (1) a narrow belt on the southwestern coast of North Carolina, extending some distance into the interior; (2) a seacoast and interior tract in the Sound country; (3) a tract on the Virginia-North Carolina coast, extending into the interior, and surrounding the Dismal Swamp area.

On the south the major continuum is chiefly bordered by the line of settlements extending into the interior along the course of the Savannah River; two filaments of settlement project outward from this principal axis. On the north the continuum shows unmistakable signs of dense settlement along a line running roughly parallel to the northern boundary of Massachusetts. Coastal New Hampshire and southwestern Maine are within this continuum. Beyond it on the northeast, center, and southwest, the various nuclei of settlement in the forests of Maine, along the upper Connecticut River, and along the Otter Creek and Lake Champlain of Vermont, as well as in the intervening dstricts between these named areas. Between the northern and the southern boundaries of this continuum are to be seen such localities of relatively high density as these: Charleston, Annapolis, Philadelphia, New York, Albany, Hartford, Newport, Providence, Boston, and Salem.

Round about this new major continuum a new major frontier line corresponding thereto could be drawn. Its length would be great, its sinuosities and curves numerous. The observing eye can more quickly perform that task than the laborious pen complete it. As of 1780, therefore, it is possible to assert with confidence, and for the first time, too, that one continuous frontier line (i.e., the major frontier line) hems in the Atlantic-based settled area (i.e., the major populational continuum). Toward this achievement by way of unification, the American settlement process for decades had been moving. At last it had accomplished this historic task. Moreover, without depending upon the liberality or the conservatism with which that line be drawn, one conclusion emerges when the line is drawn, and emerges with finality: beyond and outside of the major frontier

of continuous settlement are minor population continua and a number of population nuclei. At the north are scattered localities in New York and Pennsylvania. On the central border are nuclei in western Virginia, along the Ohio River and along the Kanawha. Central Kentucky has its early settlement nuclei, and north central Tennessee its own. Other discrete settled areas were at Prairie du Chien, Detroit, Vincennes, etc.

To conclude, therefore, it can be stated that in 1780 there existed one major population continuum with its corresponding major frontier line, and various discrete minor settled areas, each with its own minor frontier. A plurality of settled areas, and a plurality of frontiers were to be seen.

The settled areas and frontier lines in 1790. The decade that has just elapsed witnessed an ambitious expansion. The major settled area or major population continuum has expanded externally, and has developed internally. The major frontier line of 1790 when drawn by the eye, and when compared with the major frontier line of 1780, is still longer and still more sinuous. The map shows several discrete minor settled areas beyond the mountain water shed: They are located in New York, Pennsylvania, Virginia, Kentucky, Tennessee, Ohio, etc. Each is surrounded by the wilderness, each is truly discrete, and each is truly ringed in by a genuine frontier.

In 1790, then, these conclusions may be drawn: (1) the major settled area is Atlantic-based at all points except for short stretches on the South Carolina coast, and on the North Carolina coast; (2) the minor settled areas are chiefly beyond the mountains, although on the coastal confines of Georgia and Maine, scattered nuclei are identifiable; (3) one major frontier line and several minor frontier lines enclose these settled areas, major and minor. The major frontier line of 1790 extends from coastal Georgia on the south to coastal Maine on the north. It is the unmistakable successor to the major frontier line of 1780. But impressive in length though it be, yet it is but the *major* frontier line of 1790, and not *the* frontier line of 1790. Hence the conclusion may fairly be drawn, for 1790, that, as shown by the Friis maps, a plurality of settled areas and a plurality of frontier lines were then in existence.

Conclusion. We have now traversed the maps in the series compiled by Dr. Herman Friis, studying these with the uniform approach of seeking to learn from them how the settlements were located, expanded, and developed, during the period 1625–1790. The upshot of the completed survey is to demonstrate that the common notion that there was one frontier line during this period is groundless. The truth is that just as a manifold, a plurality of settled areas existed, so too did there exist a plurality of frontier lines. These frontier lines were of differing extents and of differing complexities, but always they were several, not one.

It is believed that this conclusion, based upon an empirical and inductive approach to the problem, offers a fundamental correction to a fundamental error. The conclusion is supported by findings based upon two different sets of maps, independently prepared according to different cartographical procedures.

In the foregoing analysis use has been made of the concept of settled areas of varying sizes: nuclear, minor, and major. Discreteness of settled areas in relation to other settled areas has been noted, as being an attribute of importance. Likewise, the existence of populational continua has been noted as another element in the approach. The density climax attribute is noted. Thus "unbroken-ness" and "separateness" have been singled out for attention as possessing significance for the inquiry. Settled areas (irrespective of size) in a largely uninhabited continent necessarily are bounded on one or more sides by frontier lines, i.e., the lines formed by the impingement of population on the wilderness, or vice versa. Observed have been frontier lines of minor or major length as to extent. The plurality of existence of such lines is abundantly evident. The nature of the relation between minor settled areas and their corresponding frontiers, on the one hand; and on the other, between major settled areas and their corresponding frontiers, requires no comment.

The foregoing approach, empirical and inductive, together with the system of terms outlined and used above, will be employed in the two articles in the series to follow.

A conclusion that is incidental to the principal conclusion of this article is this: the history of specific localities, in relation to the population continuum of which they may form part, or in relation to other localities from which they may be discrete, takes on fresh and increased interest, in regard to their "frontier" or their "post-frontier" qualities and characteristics. The economic, social, political, commercial, and military or naval resultants of the discreteness of a particular community at a given time and place would seem to be worthy of the attention of those historians whose

interests incline them to look at historical problems in a scientific way.

In closing this first article in the series attention is called to the fact that the proposition of the plurality of frontiers was originated, developed, and applied by the writer some years ago (1946) in connection with his discussion of that map in the Census of 1870 which exhibits the aggregate population as of 1870. In the earlier discussion the conclusion was reached that that map displayed a plurality of frontier lines. To quote from the earlier article:

> This, then, is that feature of surpassing interest which this map possesses: It displays the first representations of frontier lines to be shown on any United States census map. And not one frontier line but a plurality of frontier lines is there displayed.[22]

[22] Fulmer Mood, "The Rise of Official Statistical Cartography in Austria, Prussia, and the United States, 1855–1872," *Agricultural History*, 20: 222 (October 1946).

NEWS NOTES AND COMMENTS

DECEMBER 1951 MEETING

The Agricultural History Society met with the American Historical Association and other historical organizations at the Hotel Statler in New York City on Dec. 28–30, 1951.

The session of the Agricultural History Society on the afternoon of December 29, entitled New Fields for the Agricultural Historian, was devoted to an exploration of new opportunities for research for the agricultural historian.

David M. Ellis of Hamilton College presided. The papers presented were by Tom B. Jones of the University of Minnesota, "Ancient Mesopotamian Agriculture," and F. M. Heichelheim of the University of Toronto, "Agricultural Prices from Solon to Hercalius." M. Poston of Cambridge University was scheduled to present a paper on "The Problems of Agrarian History in Medieval England" but was absent due to illness as was Everett E. Edwards of the United States Department of Agriculture who was to direct a discussion of the formal papers. In the absence of Professor Poston and Everett E. Edwards, Professor Herbert Heaton of the University of Minnesota presented a summary of Professor Poston's contribution to Agrarian History in Medieval England and indicated what he thought Professor Poston might have said if he had been there. Professor Heaton then commented on the other formal papers in a manner that only Professor Heaton does so well.

At the luncheon of the Agricultural History Society on the same day, Dr. Carl C. Taylor, chief of the Division of Farm Population and Rural Welfare of the United States Bureau of Agricultural Economics, presented a paper entitled "The American Farmers' Movement: an Historical-Sociological Analysis." Lewis E. Atherton, the president of the Agricultural History Society, presided.

It was the universal comment of members who had attended many past sessions of the Agricultural History Society that the two sessions in New York were among the best in the history of the Society. The Society is indebted to Professor Tom B. Jones of the Department of History, University of Minnesota for the arrangement of the program of the session and to Professor Herbert Heaton of the University of Minnesota for his contribution as well as to those who presented formal papers.

APRIL 1952 MEETING

The Agricultural History Society held a joint session with the Mississippi Valley Historical Association at the Sheraton Hotel in Chicago on the afternoon of April 18, 1952. At this session on Agriculture in the Southern United States the following papers were read: "The Manufacture of Cotton Gins, 1793–1860," by Malcolm C. McMillan of Alabama Polytechnic Institute; "The Rice Industry and the Tariff," by Edward Hake Phillips of Rice Institute; and "Agricultural Diversification in the Alabama Black Belt Since 1875," by Glenn M. Sisk of the Georgia Institute of Technology.

In the absence of Everett E. Edwards, Colonel Edward N. Wentworth of Armour's Livestock Bureau and vice president of the Agricultural History Society presided at the session. James L. Bugg, Jr., of the University of Missouri directed the discussion.

COLORADO IRRIGATION CENTENNIAL

The Colorado Irrigation Centennial Celebration, commemorating 100 years of organized and continuous irrigation in Colorado, was held at Alamosa, Colorado, April 8–10, 1952. The program included an address by Professor J. C. McKinnon of Colorado College on Poudre Valley contributions to Colorado irrigation practice. The proceedings of the celebration are being published jointly by Colorado A & M College and the Colorado Water Conservation Board.

HENRY CLAY PAPERS

The University of Kentucky, in cooperation with the National Historical Publications Commission, has undertaken to compile and publish the papers of Henry

Clay. Professor James F. Hopkins of the Department of History would appreciate information regarding letters to and from Clay and other pertinent material.

HISTORY OF PENNSYLVANIA AGRICULTURE

The appearance of Stevenson Whitcomb Fletcher's *Pennsylvania Agriculture and Country Life, 1640–1840* (Harrisburg, Pennsylvania Historical and Museum Commission, 1950, 605 pp.), adds another title to the growing list of State agricultural histories. The book is a fitting culmination to the career of the author, long-time Dean of the School of Agriculture at Pennsylvania State College.

The book comprises 22 topical chapters. As the title indicates, considerable attention is given to rural life, the last half of the book being devoted to chapters on agricultural leadership, the farm home, food and clothing, family life, social customs in the home and community, the rural school, the rural church, and farmers as citizens. The book concludes with a brief bibliographical note and reference notes to chapters. Generally, the author draws upon source accounts for his material with some reference to historical studies relating specifically to Pennsylvania.

The volume is indispensable to the student of any phase of the agricultural history of Pennsylvania. At the same time, those interested in other areas of the country will find much suggestive material in this study.

AGRICULTURE CHRONOLOGY

The U. S. Department of Agriculture has recently published *A Chronology of the Department of Agriculture's Food Policies and Related Programs, January 1947 to December 1951*, by Wayne D. Rasmussen and Gladys L. Baker. Copies are available from the Division of Economic Information, U. S. Bureau of Agricultural Economics, Washington 25, D. C.

ACTIVITIES OF MEMBERS

Allen G. Bogue of the University of Western Ontario, London, Canada, is the author of "Farm Debtors in Pioneer Kinsley (Kansas)," in the *Kansas Historical Quarterly*, 20:82–107 (May 1952).

Charles A. Burmeister, secretary-treasurer of the Society, retired from the Department of Agriculture following more than 40 years of service. Mr. Burmeister, first employed in dry-land agricultural research with the Bureau of Plant Industry, was in livestock marketing research and livestock outlook work from their beginning in the Department and attained a nation-wide reputation in those fields. Since his retirement Mr. Burmeister has been devoting his time to the activities of the Society and to writing on agricultural subjects.

Harry J. Carman, long active in the Society, and Harold C. Syrett, both of Columbia University, are the authors of a new 2-volume textbook in American History entitled *A History of the American People* (New York, Alfred A. Knopf, 1952).

David M. Ellis of Hamilton College has been awarded a Ford Foundation Fellowship for 1952–1953.

Gilbert C. Fite of the University of Oklahoma is spending part of the summer of 1952 in Washington, D. C., doing research on George N. Peek and farm problems of the depression period in the National Archives, Library of Congress, and Department of Agriculture.

G. E. Fussell, Fressingfield, Diss, Norfolk, England, is the author of *The Farmers Tools 1500–1900*, a history of British farm implements, tools, and machinery. The volume is to be published by Andrew Melrose, London, in September 1952.

Mrs. Lucile Kellar, assistant coordinator of the McCormick Collection, which is now at the State Historical Society of Wisconsin, has published an article on the collection in the Spring 1952 issue of the *Autograph Collector's Journal*, published quarterly by the National Society of Autograph Collectors.

Thomas H. LeDuc of Oberlin College will be visiting lecturer in American history at the University of Colorado during the 1952 summer session.

Rodney C. Loehr, past president of the Society, who has been in Germany since the fall of 1951 serving with the Historical Division of the State Department, has had his leave extended by the University of Minnesota and will remain in Germany until the summer of 1953.

James C. Malin of the University of Kansas is the author of "Man, the State of Nature, and Climax: As Illustrated by Some Problems of the North American Grassland," which appeared in the *Scientific Monthly*, 74:29–37 (January 1952).

Roy F. Nichols, professor of history at the University of Pennsylvania, has been appointed dean of the graduate school.

Louis Bernard Schmidt, professor of history at the Iowa State College and past president of the Society, will serve as visiting professor of economics in the 1952 summer session at the University of Arizona. He will give a graduate course in agricultural policy since 1920.

Paul F. Sharp, presently in Australia on a fellowship, is the author of "The Northern Great Plains: A Study in Canadian-American Regionalism," *Mississippi Valley Historical Review*, 39:61–76 (June 1952).

Glenn N. Sisk of the Georgia Institute of Technology, Atlanta, Georgia, is engaged in research on the history of peanut farming in Georgia.

Wendell H. Stephenson of Tulane University will teach in the summer session of the University of North Carolina.

Carl C. Taylor of the U. S. Department of Agriculture has been teaching at the University of Florida, Gainesville, during the 1952 spring semester. During the summer he will be on a United Nations mission in the Caribbean area.

Lazar Volin's article, "A Long-Drawn Question," *Foreign Agriculture*, 15:183–186 (September 1951), pointing out the historical importance of land reform, was selected by a panel of the Office of Foreign Agricultural Relations as one of the two outstanding articles to appear in *Foreign Agriculture* during 1951.

Edward N. Wentworth, of Armour's Livestock Bureau, Chicago, and Vice President of the Society, has published an account of the experiences of J. T. Hollenbeck in 1882 called "Trailing Sheep in California," in *California Livestock News*, Feb. 12, 1952.

SELF-SUFFICIENCY ON THE FARM

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Sometimes it is well to subject historical concepts to test and scrutiny,[1] lest they become dogma and pass unchallenged as common currency. If the concepts stand up to the examination, no harm will have ensued. Indeed, the concept will have been strengthened to meet the challenge when renewed. If the test cannot be met, the concept must be modified or abandoned. This is a normal and familiar routine in the historical art. It means that no historical concept is accepted on the basis of age alone, but rather because it has withstood persistent challenge. Such challenges quicken and sharpen historical research and thinking, remind us that a critical appraisal of the sources should be an historical constant, and refurbish our evaluations of the past.

An historical concept, approaching dogma, is the notion of self-sufficiency on the farms of yesteryear, particularly on northern farms in colonial times. Let us essay an examination of this concept, as it is described by a well-known economist, Percy W. Bidwell, in his notable *History of Agriculture in the Northern United States 1620–1860*.[2] This work is familiar to all of us, and, indeed, anyone desiring instruction in the story of colonial and early national agricultural history must consult its pages.

What does Bidwell have to say about self-sufficiency on the farm? He says,

> Self-sufficiency, was a striking and important characteristic of the colonial farm. The farm family produced for themselves food, clothing, house furnishings, farm implements, in fact practically everything they needed.[3]

This is a rather sweeping statement, for it would seem to leave small room for trade and the activities of colonial and British merchants as far as northern farmers were concerned. But Bidwell consults his sources, mostly late nineteenth or early twentieth century secondary works, and finds that the northern farmer made his own shoes, linens, woolens, straw hats, fur caps, feather beds, pillow cases, sheets, blankets, comforts, towels, table cloths, harness, ox yokes, whips, gads, flail, axe, hoe and fork handles. This worthy produced his own beef, pork, lard, cheese, butter, bread, maple sugar and syrup, and collected honey. His house was made out of local materials, with the aid of neighbors. This dwelling contained only a small amount of iron, furnished by the local blacksmith. A nearby store or slitting mill provided nail rods which were fashioned into nails by the farmer himself. The furniture was the handiwork of the farmer or of the neighborhood carpenter or cabinet maker.

The farmer depended upon distant parts for only a few necessities or luxuries, such as molasses, rum, tea, coffee, broadcloth coats, beaver hats, shoe-buckles, silk gowns, and ribbons. Wooden or earthenware vessels were in general use, but sometimes iron, copper or brass pots were brought in from the outside. Occasionally, china, porcelain, glass, pewter or silverware might make an appearance.

Of necessity, then, the farmer's family became jacks- and jills-of-all-trades, since they must provide for most of their wants by their own labors. The farmer could not gain the advantages of specialization, because he lacked a market for the produce of his farm. In turn, a market was lacking because an industrial population was negligible or non-existent in the American colonies.[4]

If self-sufficiency was a common denominator of farmers in the settled regions, it was certainly true of the pioneer farmer. Bidwell states:

> A second economic characteristic [the first being the extensive nature of the farm] of western pioneer farming was its self-sufficiency, that is, crops and livestock were produced chiefly for farm consumption rather than for sale.[5]

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[1] This article is the presidential address presented at the annual meeting of the Agricultural History Society on August 2, 1951.

[2] Percy W. Bidwell and John I. Falconer, *History of Agriculture in the Northern United States 1620–1860* (Washington, 1925).

[3] *Ibid.*, 126.

[4] *Ibid.*, 126–127.

[5] *Ibid.*, 164.

Again, he said: "Self-sufficiency was a uniform characteristic of all pioneer settlements west of the Alleghanies from western New York to Missouri.[6]

Yet, Bidwell seems to have entertained some doubts about his conclusions, for he admits that

> To what extent the farmers in inland towns actually did purchase and sell commodities we can not at this distance accurately determine. Reasoning deductively from the facts presented . . ., we should conclude that trade of any kind was of small importance in rural communities.[7]

From his own evidence one can sympathize with these doubts, for he reports that "In every village there were one or more country stores with a varied stock generally described as European or West India goods."[8] These articles consisted of dress goods, crockery, glassware, powder and shot, and bars of iron and steel. Trade was generally by barter, and in exchange for these goods the farmer traded a "great variety of farm products—butter, cheese, flaxseed, tow cloth, grain, provisions, potash, feathers, and beeswax."[9] It would even appear that markets for these farm products did exist in seaport towns, other colonies or abroad.[10]

Bidwell even quotes figures dealing with exports of farm products from the northern colonies. In 1770, it seems, over 850,000 bushels of wheat, more than 575,000 bushels of Indian corn, some 310,000 bushels of flaxseed, and in excess of 220,000 pounds of butter and cheese, as well as significant quantities of bread, flour, beef, pork, cattle, horses, sheep, hogs and poultry, were exported.[11] These figures may not seem exciting today, but considering the size of the colonial population, the probable number of farms in the northern colonies, and the limited amount of productive farm land there, these figures would indicate that a sizeable amount of farm produce was not consumed locally. The question presents itself: if farms were self-sufficient and if most farm produce was consumed locally, are Bidwell's figures on farm exports an optical illusion or a reporting of Yankee boasting? Furthermore, why did every village have one or more stores that bartered European and West India goods for farm produce, if the farmers were self-sufficient? Is it possible that something may be wrong with the thesis of self-sufficiency on northern farms?

In an effort to ascertain partially the nature of the confusion, if confusion there be, let us turn to some of the tales told by some of the travellers of the colonial and early national period. Supposedly, these travel tales were recorded by eye-witnesses and thus may be considered as primary source material. No doubt, the authors had special horns to toot. They often quarrelled among themselves over particulars, but they showed remarkable agreement on the subject of our discussion. The selection of the travel accounts presented here has been made rather at random, the only special prejudice being an attempt to include works by farmers or those interested in farming.

Let us begin with the caustic Richard Parkinson, who fancied himself an expert farmer. Parkinson toured Virginia, Pennsylvania and Maryland, 1798–1800, and settled for a time on a farm near Baltimore. This critic found little to praise in America, and he was convinced that an English farmer would be in error if he came here. Speaking as a commercial farmer, Parkinson considered American farming methods, crops, animals and land to be of much poorer quality than in England. Returns from farming in America, he thought, were small compared with England. Nevertheless, the farmers he noticed in America, whether they were raising corn, tobacco, peaches or livestock, were commercial farmers. They were not self-sufficient farmers.[12]

Another farmer to travel in America was Morris Birkbeck. This gentleman had a personal stake in praising the Illinois country, and his effusions should be discounted with that in mind. Birkbeck found the self-sufficient farmer or individual on the fringe of the frontier. The backwoods hunter, as Birkbeck describes him, fits the subsistence picture; he could be found in the area just beyond settlement. This area was a refuge for those who could not fit into the mold of civilization. It was inhabited by those who relied on their rifle and a little corn for their subsistence. Poverty was their lot, and they lived little better than Indians.

In the settled areas behind this frontier fringe living conditions were hard during the first few

[6] *Ibid.*, 165.
[7] *Ibid.*, 129.
[8] *Ibid.*, 133.
[9] *Ibid.*, 133.
[10] *Ibid.*, 133–135, 137–144.
[11] *Ibid.*, 137.
[12] Richard Parkinson, *A Tour in America, in 1798, 1799, and 1800* (London, 1805).

years of settlement, but improvement was rapid. At Princeton, Indiana, Birkbeck reported, the inhabitants had worn buckskin a year earlier, but now the men attended church in "good blue cloth," and the women presented themselves in calicoes and straw bonnets. This change had come when a storekeeper settled at Princeton, put up a store, and brought in a small quantity of goods. The store was soon followed by a tavern and then by doctor, lawyer, blacksmith, schoolteacher, handicraftsmen and others.[13] Note the influence of the storekeeper and how quickly conditions changed with his appearance. He was the intermediary with the outside world and facilitated the change from self-sufficiency to commercial farming.

One of the best-known of the tourists was Peter Kalm, who journeyed through America on a scientific mission about the middle of the eighteenth century. Kalm commented on the functions performed by two American towns as collecting centers for farm produce. Philadelphia, which furnished goods to most of Pennsylvania and New Jersey, had two market days a week when the farmers brought in a "quantity of victuals, and other productions of the country, and this is a great advantage to the town." Almost daily, farm and forest products collected at Philadelphia, such as flour, butter, flesh and other victuals, timber, planks and so on, were sent to the West Indies where they were traded for sugar, molasses, rum, indigo and mahogany. Some of the West Indies goods, along with the produce gathered at Philadelphia, were forwarded to England, which sent in return fine and coarse cloth, linen, iron ware, wrought metals, and East India goods. A considerable amount of flaxseed was sent to Ireland. Grain was sent to Spain, and grain, flour and corn was shipped to Portugal.

The other town, New York, was also a center of trade in farm products. Grain, flour, biscuit, flesh, fish, butter, fruit, timber, tuns and boards were exported to the West Indies. Wheat and flour were forwarded to Boston, which returned flesh, butter, fish, timber and other products. New York even reached out to South Carolina, sending wheat, flour, sugar, rum and other commodities in exchange for rice.

From Kalm's observations, it would seem, these two colonial towns had quite a trade in farm products drawn from their hinterlands which they exchanged for commodities in other parts of the world. Supposedly, these foreign commodities were used, at least partially, to pay for the farm products received. It was not only Philadelphia and New York, but other towns as well that acted as entrepôts for farm products. Kalm says:

> not only New York, but elsewhere all the other English towns on the continent, import so many articles from England, that all their specie, together with the goods which they get in other countries, must altogether go to Old England, in order to pay the amount, to which they are insufficient. From hence it appears how much a well regulated colony contributes to the increase and welfare of its mother country.[14]

This debtor pattern for new countries or areas, which Kalm describes, is a rather familiar one. It represents an excess of imports over exports and indicates that there were many things which the colonists used that they did not make for themselves.

Another sojourner in America, Andrew Burnaby, who journeyed through Virginia and Pennsylvania in 1759–1760, noted that Pennsylvania exported provisions of all kinds, lumber, hemp, flax, flaxseed, iron, furs and deerskins and imported English manufactures.[15] Somewhat more interesting were the observations of Johan David Schoepf, who visited the mountains of western Pennsylvania in 1783–1784. Schoepf said:

> For the convenience of the people living scattered about, shops of this sort [a combination tavern and store] (under the very engaging name of 'stores') keep everything that may be needed; as, sugar, coffee, tea, wine, spirits, linen, woolen stuffs, hats, stockings, paper, books, spices, iron-ware and the like. The country-people have not always cash money for purchases, but then the storekeepers or merchants take any sort of produce in exchange. In the mountains and other remote regions hides and skins are the especial money. This or a similar adjustment is the case almost everywhere in America. Other travelling merchants (pedlars) go about the country in little wagons, selling and swapping; fetch their freight from and return with it to the larger and smaller towns, where, as yet, there is no great variety of handicraftsmen, but at least the most necessary, such as tailors, cobblers, dyers, smiths,

[13] Morris Birkbeck, *Notes on a Journey in America* (ed. 3, London, 1818), 91, 104, 121–125.

[14] Peter Kalm, *Travels into North America* (Warrington, England, 1770), 1: 49–50, 53–54, 254–256.

[15] Andrew Burnaby, *Burnaby's Travels through North America* (Reprinted from the third edition of 1798 with Introduction and Notes by Rufus Rockwell Wilson, A. Wessels Company, New York, 1904).

blacksmiths, hatters, etc., and then merchants, lawyers, surgeons and others, who supply the wants of the far-scattered settlers.[16]

Even in the mountainous regions, it would appear, isolation was not complete. Merchants penetrated these difficult areas to gather the surplus and to bring goods from the outside world.

Nearly a decade later, Patrick Campbell, who toured New York, New Jersey and Canada in 1791–1792, found that some settlers in the Genesee country wanted to move out after a year's residence because they were so far from a market. This interest in a market is something we shall encounter again; it scarcely supports the thesis of the self-sufficient farmer. Actually, markets were available for settlers in upper New York and parts of Vermont in the existence of Albany, a center which collected their products and supplied them with storegoods.[17]

Towns could not have arisen to the extent that they did without trade, and this trade could not have existed in a vacuum. Some of it had to be with the countryside. Isaac Weld, a British visitor in 1795–1797, put it even more strongly. American towns, he said, varied in size according to their trade, especially with the western settlements.

> This trade, [he continued] consists in supplying the people of the western parts of the United States, or the back settlements, with certain articles of foreign manufacture, which they do not find any interest in fabricating for themselves at present; nor is it to be supposed that they will for many years to come, while land remains cheap, and these articles can be imported and sent to them on reasonable terms. The articles chiefly in demand consist of hardware, woollen cloths, figured cottons, hosiery, haberdashery, earthenware, etc., etc. from England; coffee, rum, sugar [which was not sent to the back country, where it could not compete with maple sugar], from the West Indies; tea, coarse muslins, and callicoes, from the East Indies. In return for these articles, the people of the back settlements send down for exportation the various kinds of produce which the country affords: wheat and flour, furs, skins, rice, indigo, tobacco, pitch, tar, etc. etc.[18]

From Weld's account one could infer that a form of specialization had taken place and that it was to the advantage of people generally to specialize in agriculture, exchanging farm products for English goods.

Robert Sutcliffe, who toured "Some Parts of North America" about a decade later, met a young woman who came from the banks of the Ohio River about five hundred miles west of Philadelphia. She reported that many farmers who lived along the Ohio were supplied with goods from store boats. As many as four or five of these store boats passed her father's farm in a day. Luxury was making great strides among the back settlers, she said, and imported goods from Europe and Asia were being sold in some of their towns. Payment was made in grain, flour, cotton, tobacco, dried venison, furs and skins.[19]

A traveller of 1806, Thomas Ashe, had this to say about the storekeepers in the vicinity of Pittsburgh:

> These storekeepers are obliged to keep every article which it is possible that the farmer and manufacturer may want. Each of their shops exhibits a complete medley: a magazine where are to be had both a needle and an anchor, a tin pot and a large copper boiler, a child's whistle and a pianoforte, a ringdial and a clock, a skain of thread and trimmings of lace, a check frock and a muslin gown, a frieze coat and a superfine cloth, a glass of whiskey and a barrel of brandy, a gill of vinegar and a hogshead of Madeira wine, etc.

Trade was by barter.[20]

Perhaps Ashe had sampled some of the liquid commodities and had become exuberant about the goods offered by the stores, but his point was that the stores had a variety of goods for sale. He found a similar situation at Lexington, Kentucky, and Cincinnati, Ohio. Lexington, then a town of about three hundred houses, imported large quantities of goods from Baltimore and Philadelphia and exchanged them for local produce. The local commodities then were sent overland to Frankfort or Lanesville and down the Mississippi to New Orleans. From the East Lexington imported all kinds of British goods and traded them for flour, corn, hemp, flax, cotton, tobacco, ginseng, live hogs, pork, hams and bacon. "The market,"

[16] Johan David Schoepf, *Travels in the Confederation*, translated and edited by Alfred J. Morrison (Philadelphia, William J. Campbell, 1911), 222.

[17] Patrick Campbell, *Travels in the Interior Inhabited Parts of North America in the Years 1791 and 1792* (the publications of the Champlain Society, Toronto, 1937), 189, 234, 238.

[18] Isaac Weld, *Travels through the States of North America* (ed. 4, London, 1807), 1: 53–54.

[19] Robert Sutcliffe, *Travels in some parts of North America in the Years 1804, 1805, and 1806* (York, England, 1811 , 74–75.

[20] Thomas Ashe, *Travels in America* (London, 1806 , 1: 108–109.

Ashe said, "is abundantly supplied with every article of provision, found in the first markets of Europe, except fish."[21] Cincinnati had about thirty stores, which exchanged all kinds of British goods for the settlers' produce, such as flour, beef, pork, butter, and other provisions.[22]

Ashe made two comments on land that were significant. Near Pittsburgh land varied in price with its quality, but also according to the distance from town. Good land near a market town or on navigable rivers was worth several times land less fortunately situated.[23] In the judgment of the farmers themselves, then, accessibility to market was an important factor in judging the value of land. This could hardly have been the case if self-sufficient farming had been complete and general.

In his other comment Ashe related that near Lebanon, Ohio, he had met a farmer who was going to give up corn and wheat farming as unprofitable and turn to cattle, hogs and horses. This farmer already had sent two hundred live hogs to New Orleans by boat and planned to take a drove of cattle and horses over the mountains to Baltimore and Philadelphia.[24] Obviously, this farmer was thinking of markets, not in terms simply of selling his surplus products, but rather in terms of the kind of produce that would bring the greatest returns. The market had caused him to shift his farming practices.

The last witness to be called is William Faux, who made his tour in 1819. During the course of his travels he met a former English farmer who owned a farm of 350 acres in a Maryland valley. This farmer found that although his farm was 40 miles from a market, the distance was not an important matter. Men and horses, he said, could do the carrying of the farm produce when they had nothing else to do. Moreover, he had a market of a sort in the neighborhood miller.[25] In this example even a considerable land distance from market did not prevent commercial farming.

From the evidence presented here certain tentative conclusions may be drawn. The picture of the self-sufficient farmer as one who formed a small self-contained and self-sufficient economic unit and who produced commodities and services mainly for family consumption, with little or no interest in an outside market, cannot be maintained. It seems equally certain that self-sufficient farmers, if they existed at all, were not widespread. Moreover, it appears quite likely that the general run of farmers constantly sought and produced for a market, which they found in the towns, the local storekeepers or various kinds of ambulating merchants. In turn the storekeepers found a market among the farmers for goods from the outside world. That the exchange was made by barter, rather than through a money medium, does not lessen the force of the contention that there was specialization of endeavor. The storekeepers made possible this specialization, not only among sections and persons but also in the sections and between farmers.

What does remain of the concept of the self-sufficient farmer? It is a nice dream of a golden age when individuals supposedly were self-dependent and possessed all of the virtues that accompany such a position. In a sense it is the Robinson Crusoe story applied to that sturdy figure, the colonial or frontier farmer. It is isolationism applied to the individual, since it is based on the idea that once upon a time individuals could function completely upon their own.

Such a concept has a powerful appeal, but must be based upon more than dreams to gain widespread acceptance. It is possible that in isolated mountain areas the inhabitants approached self-sufficiency, since they had no alternative. As a result, their standard of living was low. It is also possible that on the frontier for the first year or two, when access to market was difficult and before the storekeeper made his appearance, living conditions approached self-sufficiency. But when the storekeeper appeared and as transportation improved, self-sufficiency melted away. Finally, we must note that it is undeniably true that farmers generally have gotten part of their consumption goods from their farms and that they used to derive more of these goods from their farms than at present. If we think of self-sufficiency as a relative matter and cease dealing in absolutes, we shall be on much safer ground.

[21] *Ibid.*, 2: 151–153.
[22] *Ibid.*, 2: 176.
[23] *Ibid.*, 2: 51–52.
[24] *Ibid.*, 2: 224–226.
[25] William Faux, *Memorable Days in America: Being a Journal of a Tour to the United States* (London, 1823), 42.

AGRICULTURAL DIVERSIFICATION IN THE ALABAMA BLACK BELT

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The Alabama Black Belt is a strip of dark prairie soil extending at the latitude of Montgomery, from east Alabama westwardly across the state and into Mississippi.[1] The outcrop of Selma chalk or "rotten limestone" which forms the base of the prairie belt is about twenty-five miles wide in west Alabama, but gradually becomes narrower toward east Alabama.[2]

The number and proportion of Negroes has, throughout most of its history, been greater than in other parts of the state, but there are other sections of dense Negro population, and unlike the rest of the South, this is not what the Alabamian means by the term, "Black Belt."[3]

For the purposes of this study, it was necessary to choose convenient political units about which data could be obtained. Therefore, the counties of Sumter, Greene, Hale, Perry, Marengo, Dallas, Wilcox, Lowndes, Montgomery, and Bullock were selected for study.[4] These counties contain the Black Prairie Belt with a surrounding area of non-prairie soils.

Settled in the last two decades before the Civil War, the Black Belt has been known ever since in Alabama as one of the traditionally plantation sections of the state in which cotton, Negroes, planters, conservatism, and all that goes with such a setting prevailed.

When the Civil War was over, the tenant system of cotton production was introduced, and the cotton-corn combination raised on tenant tracts became the prevailing system of agriculture for over sixty years.

Cotton production in the Black Belt increased from 183,964 bales in 1870 to 347,752 bales in 1900, decreased to 274,053 in 1910 and fell to 79,451 by 1920. The gains in the twenties brought production back to 175,621 in 1930, but the losses of the thirties caused it to drop to 75,529 in 1940, which was below the 1920 level.[5]

The pattern of cotton production for the state did not parallel that of the Black Belt. The state gained steadily until 1910 (1,129,527), the losses of 1920 (718,163) were less drastic than those of the Black Belt, and by 1930 (1,312,963) the state was producing more cotton than ever before. This gain was not maintained in 1935 (934,306) and 1940 (772,711), although in these years production did not drop to the low of 1920 (718,163).[6]

The years 1900 to 1920 and 1930 to 1940, then, were the years of decline in Black Belt cotton production, whereas in the rest of the state production continued to increase to 1910, dropped somewhat in 1920, rose again during the twenties, and fell off in the thirties. The drop in the Black Belt from 1910 to 1920 represented a seventy-one per cent reduction, as against a reduction of only thirty-three per cent for the whole state, and while the state more than recovered its 1910 production in 1930 the Black Belt never did.

In looking around for possible causes, the boll weevil comes first to mind. When other sections began to recover somewhat from the ravages of the boll weevil, the Black Belt found that its heavy rainfall and sticky mud prevented the early planting and early harvest necessary for combatting the weevil.[7]

There were other factors that may have contributed to cotton's downfall. Perhaps decline in productivity of the soil through long and ruthless cropping by tenants and failure to fertilize or prevent erosion had their effect through the years. The loss of Negro population by migration was heavier than elsewhere in the state, but this factor figures more as a result than as a cause. Perhaps, the government food production program of World War I, which encouraged the raising of food products rather than cotton, thus giving impetus to a movement for crop diversification, had its effect,

[1] This article was presented at the session of the Agricultural History Society and the Mississippi Valley Historical Association at Chicago, April 18, 1952.

[2] G. E. Adams, G. Butts, L. W. Stephenson, W. Cooke, *Geology of Alabama*, 237.

[3] U. S. Bureau of the Census, *Negro Population, 1790–1915*, 134.

[4] J. D. Pope, "Types of Farming Areas," in Alabama State Department of Agriculture and Industries, *Agriculture of Alabama*, 53ff.

[5] Compiled from U. S. Census, *passim*.

[6] *Ibid.*

[7] Fred Arnold, "Economic Geography of the Black Belt" (unpublished M. A. thesis, Peabody College, 1927).

too. Coupled with this was the fact that, although cotton prices were very high during the war, they were not higher in relation to the prices of other farm commodities. The farmer found it at least as profitable to raise food products as to grow cotton. Another fundamental factor has been the growing competition from regions of greater productive capacity and more favorable marketing conditions.

The decline of cotton culture and the causes for it were the incentives for the resulting changes in Black Belt agriculture. As the cotton system failed, farmers began to look for something to take its place. The unsatisfactory aspects of the cotton system had, since soon after the Civil War, inspired complaint and discussion as to how they might be remedied. It was necessary, however, for the very existence of the system to be threatened before much actual change occurred.

The value of diversified farming was recognized at an early date in the Black Belt, but as long as cotton remained the one crop which could most readily be turned into cash, advice for diversification from newspaper editors and scientific agriculturists fell upon deaf ears. In 1879 one Captain Trimble of north Sumter County was planting ten acres in Johnson grass for the benefit of his fine Jerseys and other stock.[8] There seemed to be some difference of opinion as to the value of Johnson grass, since another planter in north Sumter was asking whether there was any way for effectually getting rid of Johnson grass when it once took possession of the soil.[9]

The *Canebrake Herald* was interested in 1900 in an experiment designed to show the effect of leguminous plants on the lime soils of the Black Belt. The results of the experiment showed that legumes used as cover crops, particularly cowpeas and Melilotus, were of great value in restoring the fertility of worn-out Black Belt lands.[10]

Truck farming was being practiced at Cuba, Sumter County, in 1901, and had a very prosperous season, one hundred bushels of beans being shipped from Cuba per day for one month.[11] Cabbage, pecans, peaches, strawberries, Irish potatoes, and peas were also raised in market quantities in Sumter County.[12] The queen bee industry in Lowndes County, and the turkey farms of Uniontown and other centers are worthy of note.

Alfalfa became a favorite of diversifiers, especially around Uniontown where an alfalfa club was formed and where it was said to have "revolutionized farming."[13] Between 1910 and 1920 there was considerable expansion of alfalfa production, and for a time this crop gave promise of becoming a dominant enterprise on the lime soils of the area. At Marion "Alfalfa Day" was celebrated in 1913, attracting a crowd of 2,500 people to hear public orations.[14] During the twenties, however, much trouble was experienced in maintaining stands of alfalfa on the lime soils, and many plantings of the crop failed.[15]

The idea of diversification seemed to be an emotional phenomenon which produced much talk and writing that grew in volume as the danger of the boll weevil approached. Various efforts were made to grow such crops as sweet potatoes, peaches, pecans, tobacco, peanuts, hay, and vegetables, and to raise queen bees, cattle, and dairy products.

The boll weevil entered Sumter County in 1911, and all the rest of the Black Belt counties by 1915. Agricultural diversification in 1915 permeated the very air of the Black Belt, and of all Alabama, for that matter. Newspapers were full of the doctrine, farmers' organizations were discussing it, business leaders called meetings to consider it, immigration of white farmers to the region was being preached in order that diversification might be the more readily encouraged, and model farms were demonstrating the gospel of successful diversification.[16]

The Central Alabama Diversified Farm Association was the inspiration for the Potato Growers Association of Montgomery County,[17] and the former reported as its achievements in 1915 the cattle tick campaign, "the proposed packing house for Montgomery and Andalusia, the bankers' agreement to lend money on personal security for buying livestock, the establishment of cream routes contributory to Auburn and Selma creameries, and an increase in grain and truck crops". The Alabama Banker's Association supported the move-

[8] *Livingston Journal*, April 11, 1879.
[9] *Ibid.*, July 4, 1879.
[10] *Canebrake Herald*, May 2, 1900.
[11] *Sumter County Sun*, June 20, 1901.
[12] *Ibid.*, June 9, Nov. 24, 1904.
[13] *Canebrake Herald*, Jan. 6, 1909.
[14] *Marion Standard*, Aug. 15, 1913.
[15] U. S. Department of Agriculture, *Systems of Livestock Farming in the Black Belt of Alabama and Mississippi* (Farmer's Bulletin 1546, Washington, D. C., 1927), 3.
[16] *Montgomery Advertizer*, Feb. 28, Oct. 24, 1915.
[17] *Ibid.*, June 5, 1915.

ment and the State Department of Agriculture and the Alabama Polytechnic Institute cooperated with the work of the association. The press lent its ardent support.[18] Even the automobile dealers in 1921 launched a campaign for diversification.[19]

But the verbal agitation was more dramatic than the cold, cold figures of the census. In the strategic years 1900, 1920, and 1930, corn production fell from 7,105,475 to 5,810,518 to 3,140,443 bushels, thus mildly following the trend of cotton. Oats, which since 1850 have been a poor third to cotton and corn, fluctuated up and down from a high in 1890 of 535,303 bushels to a low of 31,682 in 1925, and back to 362,005 in 1940. But hay, legumes, and grasses jumped from 41,649 tons in 1900 to 230,985 tons in 1920, and settled to 202,122 in 1940. "Whole milk sold" rose steadily from 307,331 gallons in 1900 to 1,280,732 gallons in 1920 to 7,496,658 gallons in 1940. Here indeed was statistical evidence of a trend from the sale of cotton to the sale of milk, and evidently the cows were eating grass and hay. The increase in the number of cattle from 168,498 to 262,315 to 292,522 constituted the other significant trend which has attracted considerable attention.[20]

To say that the region changed from cotton to cattle in a period of forty years may ignore some of the finer aspects of the truth, but even since 1925 the *appearance* of the countryside has changed almost completely. In 1925 it still looked like cotton, corn, cabins, and Negroes, as contrasted with its 1950 appearance of grass, pastures, and cattle. Some of the farmers even play at cowboy today as they once played at being planters.

Although cotton reigned supreme in the Black Belt prior to 1900, there were some cattle raised. Several scattered herds appeared in the nineties, and shipments of cattle were made to New Orleans and to Meridian, Mississippi.[21] Yet the *Southern Agriculturist* of Montgomery complained in 1896 that "beef breeds of cattle are rarely seen in Alabama, and it is time that the growers of the common cattle were bringing into the state some Shorthorn and Hereford blood."[22]

The first big cattle ranch in Alabama was that of W. M. Murphy in Hale County, which in 1906 comprised 2,000 acres of former cotton plantations and on which were planted Melilotus, Johnson grass, hairy vetch, and Bermuda grass. The herd included some registered Herefords, Shorthorns, and Polled Angus, from which both beef cattle and breed cattle were sold to northern markets.[23]

Between 1903 and 1905 a colony of about twelve livestock raisers from the Blue Grass region of Kentucky settled in Montgomery County to the east of the capital city. The *Montgomery Advertiser* in reporting this fact emphasized the growing recognition of the Alabama prairie region for stock raising purposes.[24] Many other cases in increasing numbers can be mentioned for the years after 1900.

One of the principal hazards in cattle raising was the Texas fever, carried and distributed by the cattle tick. Here was the boll weevil of the cattle pastures, but the ultimate effect never proved so disastrous. The methods of eradication were rotation of pastures and the dipping or spraying of the animals with emulsions of crude oil and kerosene, or with an arsenic solution.[25] Beginning in 1908 the United States Department of Agriculture began tick eradication measures in central Alabama counties including the Black Belt counties of Dallas, Lowndes, Marengo, Montgomery, Perry, Sumter, and Wilcox.[26] The erection of vats for dipping the cattle became the accepted method of dealing with the problem.[27] It was also necessary to require that all cattle be kept in fenced pastures. The latter requirement was the source of much of the bitter opposition which arose especially from the poorer farmers. "To dip or not to dip" became a bitter political issue for a number of years.[28]

Federal, state, and county authorities cooperated in constructing dipping vats and hiring inspectors to see that cattle were free of the ticks or were properly dipped.[29] In 1915 a state-wide campaign for tick eradication was launched by the Montgomery Cattlemen's Club, the Southern Cattle-

[18] *Ibid.*, July 30, 1915.

[19] *Ibid.*, Jan. 25, 1921.

[20] Compiled from the U. S. Census, *passim.*

[21] *Sumter County Sun*, Mar. 4, Aug. 19, Oct. 21, 1897.

[22] *Southern Agriculturist*, Dec. 1, 1896.

[23] Alabama Department of Agriculture and Industries, *The Alabama Opportunity* (Montgomery, 1906), 104.

[24] *Montgomery Advertiser*, Dec. 9, 1905.

[25] W. F. Ward, "The Production of Beef in the South," *Yearbook of the United States Department of Agriculture*, 1913, 259.

[26] *Montgomery Advertiser*, June 16, 1911.

[27] Hayneville *Citizen-Examiner*, July 18, 1915.

[28] *Montgomery Advertiser*, Oct. 27, 1915.

[29] *Ibid.*, May 30, 1909; Sumter County, Alabama, Commissioners' Court Minutes, 7: 94.

men's Association, the Alabama Livestock Association, and the Black Belt Livestock Association.[30] All the Black Belt counties were released from quarantine as being tick free by 1917, but it was 1928 before the entire State was declared so.[31]

Along with the growing beef cattle industry, dairying rose to importance. Especially marked was the increase in dairying between 1910 and 1920, when the number of gallons of whole milk sold in the area rose sharply from 331,264 gallons to 1,280,732. This upward trend continued through 1940, when the amount was 7,496,658 gallons.[32] The stimulus of the First World War food prices created a dairy industry in certain counties of the Black Belt, which led to the establishment of creameries at Union Springs,[33] Montgomery,[34] Selma,[35] Marion,[36] Fort Deposit,[37] and other communities.

The year 1915 saw the organization of county livestock associations in Montgomery and Greene counties.[38] Others followed suit.[39] The Montgomery Union Stock Yards opened May 1, 1918, and have been an important factor in the economic life of the region ever since. Here was the market for something other than cotton, so long yearned for by the diversifiers.[40]

[30] *Montgomery Advertiser*, Jan. 8, 1915.
[31] *Ibid.*, Nov. 25, 1917, July 1, 1928.
[32] Compiled from U. S. Census Reports on Agriculture for 1910, 1920, 1940.
[33] *Union Springs Herald*, Jan. 5, 1922.
[34] *Montgomery Advertiser*, Aug. 12, 1917.
[35] *Demopolis Times*, Mar. 20, 1919.
[36] *Marion Times-Standard*, July 17, 1919.
[37] *Montgomery Advertiser*, June 24, 1921.
[38] *Ibid.*, Oct. 21, Nov. 24, 1915.
[39] *Demopolis Times*, June 26, 1919.
[40] *Greensboro Watchman*, Apr. 25, 1918.

The number of cattle in the Black Belt increased steadily from 1870 to 1920. The largest increases occurred between 1870 and 1880 and between 1910 and 1920. Recovery from Civil War and Reconstruction explains the first period of increase, and the boll weevil and World War I account to a large extent for the progress made during 1910–1920. The trends in the Black Belt paralleled rather closely those for the state as a whole. Another parallel may be drawn between the reduction in cotton acreage and gains in number of cattle for the decade, 1910–1920. Cotton reductions during that period, however, were greater than cattle gains.

After 1920 cotton had its second inning. The break in the cattle market after World War I left many vacant silos in the Black Belt, symbols of a premature diversification era. Cotton regained during the 1920's some of the ground lost during the 1910–20 decade. But this did not represent a permanent situation. By 1930 the minds of Black Belt farmers were turning again to cattle and pastures, and the transition has become fairly well established in the years since.

Census figures hardly seem to indicate the extent to which the raising of cattle took hold of the imaginations of the people of the Black Belt. The innumerable promotion schemes of the agricultural, business, and civic organizations, and the extensive press attention given to diversification and cattle raising grew in volume as the century progressed. One is led to believe that the volume of discussion was more indicative of the fear of the boll weevil than of actual progress toward diversification. The foundation was being laid, however, for the present extensive cattle and dairy industry of the Black Belt counties.

ANCIENT MESOPOTAMIAN AGRICULTURE

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The casual reader of "economic histories" and "histories of agriculture" must often lay aside his book with the impression that ancient Mesopotamian agriculture constitutes a subject either obscure or unimportant, a subject incapable or undeserving of the extensive treatment accorded the story of agriculture in Egypt or the Mediterranean lands.[1] In reality, agriculture was a major activity in old Mesopotamia; its development in the Land of the Two Rivers affected the history of other regions in the Near East, and its influence reached ultimately to the Greeks and Romans. Moreover the mists which surround the history of agriculture in Mesopotamia are not impenetrable: source materials of many kinds are abundant and rival in quantity the papyri and archaeological remains which have been used to reconstruct the agricultural history of ancient Egypt.

It would be quite incorrect to say that the history of ancient Mesopotamian agriculture has not been studied. The distinguished scholar Fritz M. Heichelheim is the author of the best available synthesis of Mesopotamian economics, and the extensive literature which he cites shows the subject to have been anything but neglected.[2] There are chapters on agriculture in histories of Babylonia and Assyria;[3] there are monographs and articles on special phases,[4] and there are allusions to things agricultural in works dealing with other aspects of Mesopotamian life and history.[5] The sheer bulk of this secondary material is impressive, and it is amazing that so little of the accumulated knowledge which it represents has found its way into more general treatments of economic and agricultural history. The most probable explanation for this phenomenon is that the material is scattered and not easy to find; much of it has appeared in publications consulted almost exclusively by orientalists. It is a price we pay for overspecialization.

We are concerned in this paper with opportunities for research in agricultural history. Great opportunities exist in the ancient Mesopotamian field. The good work already done in many instances excites the utmost admiration, but it also has its limitations. In the first place, it has not reached the wider field for which it ought to have been intended. Secondly, most of the work has been done by philologists or linguists who have not always examined the evidence for information which a specialist in agricultural history or agricultural economics might think essential.

The final and most serious criticism of the earlier work, however, must be this: too often it has been customary to approach the subject as if the history of Mesopotamia from 3000 to 300 B.C. could be treated as an entity. This concept is erroneous. Mesopotamian history has not one, but several, chapters. A number of distinct historical periods and situations are involved. In three millennia there were bound to be many changes in land tenure; new crops were introduced; the area under cultivation expanded and contracted; there was a change from a barter to a money economy.

[1] This article was presented at the session of the Agricultural History Society with the American Historical Association at New York City on Dec. 29, 1951.

[2] Fritz M. Heichelheim, *Wirtschaftsgeschichte des Altertums* (2 vols., Leiden, 1938) 2: 934–986.

[3] As in Bruno Meissner, *Babylonien und Assyrien* (2 vols., Heidelberg, 1920–25); Louis Delaporte, *Mesopotamia* (trans. by V. Gordon Childe, New York, 1925); *Cambridge Ancient History*, 1 (New York, 1923).

[4] See Heichelheim's bibliography as well as Walter Schwenzner, "Das geschäftliche Leben im alten Babylonien," *Der Alte Orient* 16: 1–32 (Leipzig, 1916); Friedrich Delitzsch, *Handel und Wandel in Altbabylonien* (Stuttgart, 1910); Friedrich Hrozný, "Das Getreide im alten Babylonien," *Sitzungsberichte der Kaiserliche Akademie der Wissenschaften in Wien (Philosophisch-Historische Klasse)* 173.1: 1–215 (Wien, 1913); Tom B. Jones, "By the Rivers of Babylon Sat We Down," *Agricultural History*, 25: 1–9 (1951), and other items cited below.

[5] See Heichelheim, *Wirtschaftsgeschichte*, 1: 106–198; A. Salonen, "Die Wasserfahrzeuge in Babylonien," *Studia Orientalia* 8.4 (Helsingfors, 1939); C. H. W. Johns, *An Assyrian Doomsday Book* (Leipzig, 1901); T. Fish, "The Sumerian City of Nippur in the Period of the Third Dynasty of Ur," Iraq, 5: 157–179 (1938); Wilhelm Kohler and Arthur Ungnad, *Hammurabi's Gesetz* (Leipzig, 1904–1911); Josef Kohler and Arthur Ungnad, *Assyrische Rechtsurkunden* (Leipzig, 1913).

Furthermore, our sources of information for this long period do not maintain a constant level of abundance or quality. Instead, there are high peaks and deep valleys: we have good sources for the time of Urukagina (*c.* 2400 B.C.); there is a superabundance of material for the Third Dynasty of Ur, especially for about a generation beginning around 2100; in the late eighteenth and early seventeenth centuries B.C. the Age of Hammurabi is well documented, and the Kassite period which follows is fair; finally, a much later age beginning with the Assyrian Empire in the second half of the eighth century and running down through Neo-Babylonian and Persian times rivals the Third Dynasty of Ur in the richness of its source materials.

These are the peaks, but between them are the valleys—long periods about which we can learn virtually nothing because of the poverty of the sources. Contemplation of these gaps in our knowledge will show the weakness of the method which I have been criticizing. The application of this treatment to a specific subject may sometimes be useful or admissable, but its disadvantages should never be forgotten.

The research undertaken thus far which appears most successful and likely to be of permanent value is that which has confined itself to single periods or aspects of those periods. The divisions of Mesopotamian history already exploited in this way to some extent are the Age of Urukagina almost at the beginning of the time scale;[6] the Hammurabi period (in the middle);[7] and the Assyrian, Neo-Babylonian, and Persian epochs at the end.[8] One of the most promising eras, that of the Sumerian Third Dynasty of Ur, has scarcely been touched, and we shall have occasion to consider its possibilities in some detail.

First, however, something should be said about the sources as a whole. The sources for ancient Mesopotamian agriculture fall into two main classes: the material remains and the written records. The first class includes not only the tools, implements, seeds, storage pits and granaries discovered in the course of archaeological excavation, but also the graphic representations of plants, tools, and agricultural scenes which occur in relief sculpture or on the seals.[9] The Mesopotamian plow with its seeder tube, to cite only a single example, would be difficult to reconstruct if we did not have it pictured for us on seals or in sculpture.

Among the sources of the second class may be listed relevant passages in the law codes—Sumerian, Old Babylonian, Assyrian—and the references to agriculture in the royal inscriptions of all periods. There are also numerous letters, both official and private, which are equally useful. Moreover, one of the most spectacular of the recent discoveries is the so-called "farmer's almanac" which contains detailed instructions for Sumerian farmers in the period just before Hammurabi.[10]

The bulk of our information, however, comes from thousands of inscribed clay tablets, the actual "business records" of the several periods which I have enumerated. Written in the various cuneiform scripts and languages of succeeding ages, these documents are the lists, ledgers, contracts, receipts, and work records of kings, priests bureaucrats, traders, artizans, and farmers. Whole archives relating to the activities of a single group or individual are known. Here, as in the case of Egypt and its papyri, the historian finds himself embarrassed by the wealth, rather than the poverty, of his evidence.

Turning specifically to the case of the Third Dynasty of Ur, we encounter an overwhelming mass of material. More than 10,000 texts have been "published"; that is to say, not translated, but reproduced in "autograph copies" or line drawings with indexes and summaries of the general purport

[6] Anna Schneider, *Die Anfänge der Kulturwirtschaft: die sumerische Tempelstadt* (Essen, 1920); Anton Deimel, "Sumerische Tempelwirtschaft zur Zeit Urukaginas und seiner Vorgänger," *Orientalia* (Series 1), 1, 2, 4–7, 14–17, 20–21, 26, 28, 32, 34–35, 43–44 (Rome, 1920–30); Anton Deimel, "Sumerische Tempelwirtschaft," *Analecta Orientalia*, 2 (Rome, 1931).

[7] See Heichelheim, *Wirtschaftsgeschichte*, for bibliography, also Jones, in *Agricultural History*, and Schwenzner, in *Der Alte Orient*, 16: 1–32.

[8] The bibliography here is very extensive. Again, see Heichelheim, *Wirtschaftsgeschichte*. A. Leo Oppenheim (Oriental Institute, Chicago) has prepared a manuscript entitled, "The Material Culture of the Neo-Babylonian Period on the Basis of its Documents" which presumably will be published in the near future.

[9] Much of this material is conveniently shown in Bruno Meissner, "Grundzüge der babylonisch-assyrischen Plastik," *Der Alte Orient*, 15: 1–156 (Leipzig, 1915), and Paul Leser, *Entstehung und Verbreitung des Pfluges* (Münster, 1931), 241–249.

[10] Samuel N. Kramer, "Sumerian 'Farmer's Almanac,'" *Scientific American*, 185(5): 54–55 (November 1951).

of each tablet.[11] Occasionally, transliterations of the texts are provided, and brief commentaries; but full scale discussions are generally avoided. Many thousands more of the texts are known to be in the possession of museums, libraries, and private persons. These still await publication, while hundreds of new texts are unearthed by the archaeologists every year.

Not all the texts relate to agricultural affairs, of course, but there are enough to provide a very good picture of Sumerian agriculture on the great temple estates and the small individual holdings of the twenty-first century B.C. Do we want to follow the farmer through his annual round of activities? Do we want to know how he prepared the soil, how he sowed his crops, how much seed he used, the extent of his yield, how crops were harvested and stored, the size of fields and gardens, how farm labor was employed? These questions may be answered by anyone who will take the trouble to read the texts and analyze the information which they provide.

The principal field crops mentioned in the texts of the Third Dynasty of Ur are barley, wheat, emmer, sesame, onions, peas, and beans. Dates, pomegranates, and figs are prominent in the lists of products coming from the smaller plots called "gardens." Of all these, barley and dates were by far the most important in their respective categories. The quantities of wheat and emmer produced were insignificant in comparison to the annual yield of barley. Of more than 150 texts from Ur, only 17 mention wheat or emmer, while the rest are concerned with barley. This is a typical situation. Barley provided food for man and beast, and it figured prominently in the flourishing Sumerian beer industry.[12] Barley was easier to grow than wheat, its yield was superior, and it was more adaptable to the primitive milling methods then in vogue. The date, too, was prized for its versatility and its ease of cultivation. Like barley, dates were a source of food and drink; in addition, the wood of the date palm was important in a country which had few other trees.

The texts abound with information about the sizes of fields, but a careful survey and analysis of this material has yet to be made. It is not meaningful to report, as some people have done, that the smallest field known was of such and such a size, or that the largest known field contained so many acres. It would be preferable to determine whether most of the fields were large, or most of them small; we should know the average size of the large and the small fields. Sumerian fields were surveyed frequently; not only the areas but also the dimensions of the individual fields were sometimes reported. In addition, fields and sections of fields were classified as good, hard to work, irrigated, at the inundation level, too high for irrigation, enclosed, and containing clay or salt.[13] Actual sketches of fields were drawn on some tablets.[14]

The appearance of a preliminary translation of the so-called "farmer's almanac" found two years ago at Nippur may be of some assistance in a reconstruction of the Sumerian methods of field preparation, sowing, and harvesting.[15] It is clear from the published photographs that on palaeographic grounds the text must be dated about the time of Hammurabi, yet the language is Sumerian rather than Akkadian. This suggests an earlier date for the original composition of the "almanac"; that is to say, the text we now possess may be a "new edition." Assuming that this text does describe the agricultural methods of the Sumerian period, it can to some extent be combined with the other evidence which we have. The "almanac" and the texts of the Third Dynasty are not in complete agreement, but the apparent contradictions may be removed or explained by further study.

Although the crops were not planted until November, the first preparation of the fields began right after the harvest in June and before the hot, dry summer set in. The fields were cleared with

[11] A good example of this type of publication is George Hackman, *Temple Documents of the Third Dynasty of Ur from Umma* (New Haven, 1937). For a good bibliography of the published Third Dynasty texts and as an example of a useful type of publication, see A. Leo Oppenheim, "Catalogue of the Cuneiform Tablets of the Wilberforce Eames Babylonian Collection," *American Oriental Series* (New Haven, 1948), 32.

[12] Louis F. Hartman and A. Leo Oppenheim, "On Beer and Brewing Techniques in Ancient Mesopotamia," *Journal American Oriental Society*, Supplement 10 (1950).

[13] Representative texts may be seen in George A. Barton, *Haverford Library Collection of Cuneiform Tablets*, 3, no. 373 (New Haven, 1918); and Mary Inda Hussey, *Sumerian Tablets in the Harvard Semitic Museum*, no. 27 (Cambridge, 1915).

[14] See *Orientalia*, 49, plates 136–137 (1930).

[15] Kramer, in *Scientific American*, 185(5): 54–55 (November 1951).

pickaxes, the stubble was pulled up and removed, and the area was smoothed by dragging it with a heavy beam.[16] In late September and October, the field work was renewed: the larger fields were plowed and harrowed, while smaller plots were prepared with picks and spades.[17] When all was in readiness for planting, the furrow was drawn with a special plow which was often equipped with a seeder tube.[18] Seed was dropped in the furrow by hand on occasion,[19] and may have been sown broadcast in the case of the fallow fields.[20]

The texts uniformly show that the Sumerians were anything but generous with their seed. The usual amount of seed allotted for barley was 450 *silà* (c. 10½ bu.) per *bùr* (15.75 acres), or 2.8 pecks per acre.[21] Wheat was sown at about 2 pecks per acre.[22]

This amazingly small amount of seed can be explained only by the arid condition of the lower valley which necessitated much irrigation of the crops and a resultant wide spacing of the furrows. As a matter of fact, the "almanac" has some information on this point. Kramer's interpretation of the text is that 1 shekel-weight of grain was used as seed for each *gar* (a strip of 19½ feet). Assuming as he does, that there were 8 furrows to a *sar* (1 square *gar*) and that the shekel equalled one ounce, this would amount to 900 pounds of seed per *bùr* (1800 *sar*), or at least 15 bushels.[23] Now, the word *gin*, which denotes a shekel-weight, is also used for a measure of capacity equivalent to one-sixtieth of a *silà*. If a field were seeded at 450 *silà* per *bùr*, this would amount to 27,000 *gin*; dividing this by 1800 we would arrive at a figure of 15 *gin* per *sar*. At one *gin* per strip of one *gar* length, it would appear that there were 15 furrows in each *sar*, and the distance between each furrow would be 15 inches instead of the 27 inches implicit in Kramer's theory.

The problem of the yield is even more thorny than that of the amount of seed employed. With the special kind of agriculture which we find the Sumerians employing, the yield was likely to be high, but figures of 80 and 100-fold yields must be viewed with doubt.[24] The 36-fold yield of the Neo-Babylonian period is much more credible,[25] and an average rental of seven bushels per *iku* (⅞ acre)[26] would suggest, at the rate of 20 to 30 percent of the crop, a reasonable yield of 35 bushels per *iku* although even this would amount to a 50-fold return.[27]

The Third Dynasty texts provide little definite information about irrigation during the growing season, but the "almanac" recommends four periods of irrigation while warning that a rust (the *samanu* disease) may appear about the time of the third irrigation. Texts dated in the later months of the year and referring to plowing, harrowing, and spading may indicate some cultivation of the growing grain although it is more likely that they record work on the fallow fields.[28]

At harvest time vast numbers of workers were called to the fields. One text from Umma speaks of 8400 men employed over a period of three months in harvesting and preparing the fields after the harvest was over.[29] Reaping was done with sickles. The "almanac" and the texts agree that the workers were organized in three-man teams: one man reaped, another piled up (or raked?) the grain,

[16] *Ibid.*, and Oppenheim, in *American Oriental Series*, B7 on page 16.

[17] For example: Barton, in *Haverford Library Collection*, 2, no. 97, a total of 15 oxen are recorded as having been assigned to the harrows and 5 to plows for the ninth day of the sixth month (late October-early November). See also Oppenheim, in *American Oriental Series*, Noor I on pages 160–161.

[18] *Ibid.*, Noor 5 on page 162.

[19] Suggested by the "almanac" and also in Hussey, *Sumerian Tablets*, no. 28, where the fields worked by farmers without oxen employ a larger amount of seed.

[20] The word *bal-e* as used in Edward Chiera, *Selected Temple Accounts from Telloh, Yokha, and Drehem* (Princeton, 1922), no. 28, suggests a "pouring" of seed.

[21] There are many instances: Chiera, *Selected Temple Accounts*, no. 28; Hussey, *Sumerian Tablets*, no. 28; Barton, in *Haverford Library Collection*, 3, no. 241.

[22] Chiera, *Selected Temple Accounts*, no. 28.

[23] Kramer, in *Scientific American*, 54.

[24] See "Ackerbau" in *Reallexikon der Assyriologie* 1: 16–20 (Berlin, 1935).

[25] *Ibid.*, 1: 20; also Hugo Prinz, "Babyloniens Landwirtschaft einst und jetzt," *Weltwirtschaftliches Archiv* 8: 1–28 (1916).

[26] *Reallexikon der Assyriologie*, 1: 19.

[27] In Hackman, *Temple Documents*, no. 277 there is an account of the rental from two fields. One field of nearly 13 *bùr* would have required about 20 *gur* of seed. Its rental amounted to 130 *gur*. Multiplying this by 4 we should then have a 24-fold yield. The other field of about 10 *bùr* would have needed 15 *gur* of seed. Its rental was about 163 *gur*, possibly representing a 40-fold return.

[28] For example, Hackman, *Temple Documents*, no. 270.

[29] *Ibid.*, no. 272.

while a third tied the grain in bundles.[30] At a threshing floor, the grain was trodden by animals,[31] beaten with sticks or spades,[32] or a cart might be driven over it.[33] In later times a sledge was used,[34] but there is no certain evidence of this contrivance in the Sumerian period.

After the harvest and the threshing came the work of transporting the grain to a place of storage. This next step is well illustrated by a tablet from Umma[35] which records that 18 men spent three days loading 1500 bushels of barley on a ship.[36] Then came a four-day trip by canal and river to the granary at Umma with 19 men towing the vessel at least a part of the way. Four more days were consumed in unloading (literally, "digging out and pouring out the grain") and depositing the cargo in the granary.

Although the torrid summer was a slack period in the fields, there were still the dates in the gardens to be cared for. The groves must be irrigated, and then there was the date harvest which came in October. We have abundant information in the texts about this date culture. There are lists which give the number of trees in each grove. Further, the trees were classified according to yield. A few trees produced as much as 60 *sila* (over a bushel) of dates, while others as little as 3 *sila* (about 2 quarts).[37] The average per grove was in the neighborhood of 10 quarts a tree. Careful analysis of the statistical material from the texts would reveal the details of the management of the groves; the age of the trees, the proportion of young trees to old, and the like.

Enough has been said, I think, to indicate that Sumerian agriculture is a subject of some importance in itself. It is also a field in which there is much to be done. Finally, there is another aspect of this matter which should be interesting to historians in general: the implications of Sumerian agriculture for the reconstruction of early Mesopotamian history.

The methods of the Sumerian farmer indicate that the land of Sumer and Akkad in the third millennium B. C. was plagued by the same aridity which exists in southern Iraq today. The country was virtually uninhabitable without a highly organized and carefully directed agricultural system involving the control of labor, the development of irrigation, and the invention of special tools and methods for cultivation. We now know that agriculture began in this part of the Near East, not in the river valleys, but in the hills where dry farming was possible.[38] Later, farming people moved down into ancient Assyria where the rainfall was sufficient for them to carry on the type of agriculture which they had already developed in the hills.[39] Still later, probably, the Sumerians occupied the swampy area at the head of the Persian Gulf where again there was sufficient water for the only kind of farming they had known. As the years passed, however, the Sumerians began to develop the new methods and the organization which enabled them to advance upriver from the swamps to the dry, but fertile, plain. With every new acre brought under cultivation, there was an increase in the food supply and automatically in the population. Thus Sumer grew.

If this is the true story, we can reject the older interpretations of Mesopotamian history which postulated a fierce struggle between Semites and Sumerians for the early control of the valley.[40]

[30] The "almanac" and Leon Legrain, *Business Documents of the Third Dynasty of Ur* (2 vols., London, 1937–47), no. 1346 where workmen are recorded as harvesting (*še-kin-a*), raking or piling up (*SUM-tab-ba*), and bundling or tieing (*še-pa-ga*) the grain. Oppenheim in *American Oriental Series*, 38, thinks *SUM-tab-ba* indicates some kind of work on the irrigation system, but having seen the "almanac" he may be inclined to abandon this view.

[31] *Hammurabi Code*, sections 268–270. For a new and easily accessible translation, see *Ancient Near Eastern Texts* (ed. James B. Pritchard, Princeton, 1950).

[32] Oppenheim, in *American Oriental Series*, G21 on p. 72.

[33] The "almanac" suggests this.

[34] Meissner, *Babylonien und Assyrien*, 1: 196.

[35] Hackman, *Temple Documents*, no. 242.

[36] Since 220 *gur* of grain are involved in this operation, it is probable that more than one vessel was used. Some vessels are known with a capacity of 120 *gur*, but the ordinary ones were of 60 *gur* capacity and less.

[37] Vincent Scheil, "L'exploitation des dattiers dans l'ancienne Babylonie," *Revue d'Assyrologie*, 10: 1–9 (Paris, 1913).

[38] Robert J. Braidwood, *Prehistoric Men*, Chicago Natural History Museum, Popular Series, Anthropology, no. 37 (Chicago, 1948), 86–99; Carleton S. Coon, *Cave Explorations in Iran 1949* (Museum Monographs, The University Museum, University of Pennsylvania, Philadelphia, 1951).

[39] Ann Perkins, *Comparative Archaeology of Early Mesopotamia* (Chicago, 1949).

[40] Thorkild Jacobsen, "The Assumed Conflict between Sumerians and Semites in Early Mesopotamian History," *Journal American Oriental Society*, 59: 485–495 (1939), has challenged the old theory on other grounds.

Before the introduction of Sumerian technology, the upper valley (Akkad) could have supported only feeble groups of nomads or a few villagers huddled on the river banks. It is significant that Sargon of Akkad, the first Semitic ruler of importance, flourished about 2350 B. C., five hundred years after the first appearance of a rich and brilliant civilization at Sumerian Ur.

Appendix.—Since the Third Dynasty texts cited in the body of this paper have been selected for illustrative purposes only, it seems advisable to append a list of all texts actually consulted for this study. The list is not complete for the period by any means, but it will give some idea of the abundance of the material. It may be guessed that there are 500 or more published texts which refer to agricultural affairs; only about 140 are listed here.

Source	Subject				
	Surveys and field sizes	*Field preparation*	*Seed and sowing*	*Field work*	*Harvest*
Barton[41]	1:193; 2:27, 67; 3:361, 373	2:97; 3:150, 282, 316, 320, 336, 386	1:393; 2:110; 3:177, 201, 241, 263	3:350	2:55
Contenau[42]	100	61, 81		80	
Chiera[43]		33	28		
Hackman[44]		221, 267, 268, 269, 270, 271		218, 219, 220, 231, 235, 237, 239, 240, 241, 243, 249, 250, 259, 260, 261, 262, 264, 265, 342	217, 233, 236, 252, 272
Hussey[45]	27		28, 29		
Keiser[46]		210, 288		225	92, 242
Keiser[47]		113, 115, 116		124, 129	112, 120, 125
Lau[48]		172	106, 256		
Legrain[49]			374, 377	378	
Legrain[50]	1353, 1355, 1363, 1367, 1369, 1372	1335	1331, 1334, 1357, 1364	1342, 1349, 1354, 1360	1338, 1346, 1370, 1407, 1429
Lutz[51]	1:100	1:87		2:3	1:6, 84; 2:41
Oppenheim[52]		B7, E20, E22, 15, Noor I	I34	H21	G21, N16
Pinches[53]			22		
AO-1[54]	49	76, 166		73, 74, 77, 84, 90, 141, 146	75, 161, 193, 213, 303
AO-7[55]		215, 239, 284	339	204, 229, 237, 300	302
Orient.[56]		394		265, 365, 502	222

[41] Barton, in *Haverford Library Collection.*

[42] George Contenau, *Contributions à l'historie économique d'Umma* (Paris, 1915).

[43] Chiera, *Selected Temple Accounts.*

[44] Hackman, *Temple Documents.*

[45] Hussey, *Sumerian Tablets.*

[46] Clarence E. Keiser, *Selected Temple Documents of the Ur Dynasty* (New Haven, 1919).

[47] Clarence E. Keiser, *Cuneiform Bullae of the Third Millennium B. C.* (New York, 1914).

[48] Robert J. Lau, *Old Babylonian Temple Records* (New York, 1906).

[49] Leon Legrain, *Le Temps des Rois d'Ur* (Paris, 1912).

[50] Legrain, *Business Documents.*

[51] Henry F. Lutz, "Sumerian Temple Records of the Late Ur Dynasty," *University of California Publications in Semitic Philology*, 9: 117–268 (1928).

[52] Oppenheim, in *American Oriental Series.*

[53] Theophilus G. Pinches, *Babylonian Tablets of the Berens Collection* (London, 1915).

[54] Nikolaus Schneider, "Die Drehem und Djoḫa Urkunden der Strassburger Universitäts— und Landesbibliothek," *Analecta Orientalia*, 1 (Rome, 1931).

[55] Nikolaus Schneider, "Die Drehem und Djoḫa-Texte im Kloster Montserrat," *Analecta Orientalia*, 7 (Rome, 1932).

[56] Nikolaus Schneider, "Die Geschäftsurkunden aus Drehem und Djoḫa in den staatlichen Museen (VAT) zu Berlin," *Orientalia*, 47–49 (Rome, 1930).

MIDDLE EASTERN AGRICULTURE IN THE INTER-WAR YEARS

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The Background. Agriculture is the principal occupation in all Middle Eastern countries.[1] From two-thirds to three-fourths of the population of these countries make their living by cultivating the soil. The percentage varies from 80 in Turkey to about 70 in Egypt and 18 in Israel.

Characteristic of agriculture in the countries of the Middle East are the extremely primitive methods of farming, the low output per unit of land—except in Egypt—and the low productivity of those gainfully employed in this occupation. The production per worker is estimated to be one-sixth of that of Western Europe and one-third of Eastern Europe.

The form of agriculture in any one locality is, of course, decided by such natural conditions as the quality of the soil, water resources, and the possibilities of irrigation. In all these countries the barren land far exceeds the cultivated area. The arid land in Egypt constitutes over 90 percent of the total area, in Transjordan 80 percent, and in Syria and Israel, 50 percent. In Turkey, too, much of the country is barren. The climate in each of these countries is, with some variations, similar: seasonal rainfall between October and April, followed by a hot, rainless season.

Not all the cultivable area is actually under cultivation. Lack of statistics, prevalence of fallow in the rotation which diminishes the actual crop area (the cultivated area is twice as large as the area under crops) and, on the other hand, the fact that in Egypt the average cropping rate is one and one-half crops per year,[2] make such calculations difficult. But there are some rough estimates which may give us an idea of the situation. According to recent estimates the cultivable area in Egypt, Transjordan, and Palestine is 30 to 50 percent larger than the area actually cultivated; in Syria and Lebanon the cultivable area is three to four times larger,[3] and in Iraq 5 to 6 times as large as that actually cultivated.[4]

Enlargement and development of irrigation schemes, as well as the introduction of new methods of cultivation, is possible through effort and planning. But these problems are interlocked with the social system of agriculture in the area and determined by the legal situation and the conditions of land tenure. "The peasant is imprisoned within the walls of his own agricultural system."[5] Whereas in Europe, prior to World War I, the remnants of the feudal social order only partially determined the relations in agriculture, in the Ottoman Empire and its provinces, feudalism or semifeudalism was the prevailing order. The dominant system of landownership was derived from the historical development of the Arab conquest, Islamic religious laws, the conquest of the Turks and the tribal and social development during that time.

As a result of this situation, of the Ottoman Land Code of 1858, and the Land Registration Law of 1859, there were several co-existant forms of landownership in all these countries with some differences in the interrelation of the groups. There was the freehold, the official crownlands, the lands

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[2] In a great part of Egypt there are three periods of vegetation each year; the rotation of crops and fallow is mostly biannual. Doreen Warriner, *Land and Poverty in the Middle East* (London and New York, 1948), 28 ff.

[3] An irrigation scheme which has been carried out in Lebanon in recent years will double the total amount of irrigated land there. The other countries have a variety of irrigation schemes. Cf. F. Bochenski and W. Diemond, "TVA's in the Middle East," *Middle East Journal*, 4: 52(1950).

[4] According to other estimates, the cropped area in Syria, Lebanon, and Iraq is about one-half of the cultivable area, and in Transjordan about 40 percent. Warriner, *Land and Poverty in the Middle East*, 10.

[5] B. A. Keen, *The Agricultural Development of the Middle East: A Report to the Director General Middle East Supply Centre, May 1945* (London, 1946), 109.

of religious endowment, and the common-held lands.[6]

The division of land according to the type of ownership varies from country to country. While in Lebanon much of the land is privately owned, the proportion of such ownership in Iraq and Transjordan is only about 20 percent, and in Palestine and Syria slightly higher.

In actual practice there is often little difference between freehold and state land, both of which are usually held by large owners. In Egypt and Syria about one-half of the land is held by large proprietors—in Syria mostly absentee landowners—whereas in Palestine less than one-third is held by such owners. In Iraq, except for the North, most of the land is in the hands of *sheikhs* and city notables, while in Turkey a great deal of land is centralized in large estates.[6a]

The conditions of tenancy vary from country to country, and even from region to region, but there are a number of features common to all. The Ottoman Land Legislation of 1858 and 1859 provided that the holdings should be recorded in the land register. But the Ottoman administration was unable to put this demand into practice, and the greater part of the cultivated land remained unrecorded and occupied on loose and irregular titles and tenures. There was no detailed cadastral survey to locate the borders of the individual holdings. Tenancy was often for a short term, with no protection for the tenant from eviction or a rise in tenancy fees.

As a result of this legal and social setup, the agriculturist in all these countries lacks both protection of his rights as a holder or tenant and a sense of security. The holder of communal land, as well as the tenant who has no security of tenure and receives mostly only a share of the crop—the size of the share varying from country to country and even from locality to locality—is not interested in improving his parcel, since for the most part no compensation is paid him for the improvements he makes. Again no law or regulation protects the tenant from eviction at the will of the landlord. The absentee owner is similarly uninterested in making investments for the purpose of improving or maintaining the level of husbandry; he is in effect—intentionally or unintentionally—the exploiter of the land and its tenants.

The farmer in the communal system will not care much about soil maintenance since he is allotted a different field for cultivation every two years. The "strip" farming and fragmentation of holdings, so widespread in this region, lead to the same sorry ends. Originated either by the manner of plowing or by the inheritance laws and by the desire to give the tenant or owner his fair share of good and poor land,[7] it sometimes leads to absurdity. "An individual may own one-fifth of a date tree which is on someone else's land, one-seventh of another, which is on his own land; some of the part-owners may be local cultivators and the remainder residents of a distant town."[8]

The land has thus been sadly exploited, the productivity of the soil has deteriorated, agriculture has been conducted in an extensive way, and the standard of living of the agricultural population has remained extremely low. Living under such conditions of subsistence farming and extreme poverty, the farmer has been unable to cope with the frequent natural disasters such as drought, disease, etc. and has been forced, when they occurred, to borrow money or seed at high interest rates. This resulted either in the privately owned lands of the cultivator falling into the hands of usurers, thus further increasing the proportion of tenants, or raising the cultivator's indebtedness, so that a considerable part of the crops had to be given up to the usurers.

The result was: "Near starvation, high death rates, soil erosion, economic exploitation—this is the pattern of life for the mass of rural population in the Middle East. It is a poverty which has no parallel in Europe, since even clean water is a luxury."[9]

[6] *Mulk* (freehold), *miri* (crownlands), *waqf* (religious endowments or church lands), and *musha* (commons or communal landholding). The communal type of land holding of *musha* is to a certain degree similar to that of the old Russian mir and the south-Slavonic zadruga. These, however, included a more communitarian way of living and landholding than the mere community ownership of land in the villages of the Near East, although some common features are to be found.

[6a] B. D. Weinryb, "Changes in Land Tenure in the Middle East" in *Freedom and Reason* (New York, 1951), 447–468.

[7] In medieval Europe, and up to the eighteenth century, the strip system prevailed. There are a number of theories concerning its origin which may also apply to the Middle East. Herbert Heaton, *Economic History of Europe* (New York, 1948), 87–101, 404 ff.

[8] Keen, *The Agricultural Development of the Middle East*, 15.

[9] Warriner, *Land and Poverty in the Middle East*, 1.

Between the Two Wars. When, after World War I, the Ottoman Empire disintegrated and the new states of the Middle East arose as independent, or semi-independent units, each of them held that changes and improvements in agriculture were the basic need, since the great majority of the people derived their livelihood from this occupation.[10] But it was difficult to materialize these plans.

In the political struggle for independence, the awakening of nationalism, the religious motive, the customs, the retardation and conservation of the traditional way of life, all played an important role. These countries were, therefore, inclined to retain—sometimes even to foster—the Moslem heritage and the status quo in land tenure, and the feudal relations. This, in turn, hampered social reforms and agricultural advancement. Only in Turkey and Palestine, where deep political transformations occurred, did the situation greatly change for the better.

Let us begin with the government of Turkey, which attempted to raise agricultural production in order to make the country self-sufficient and to elevate living standards for the peasant. The measures taken vary from a change in the taxation policy to organization of model farms, agricultural education, irrigation projects, and agricultural credits. In 1925 the Ottoman tithe was discarded, and a system of taxation based on income introduced. In the same year a model farm was set up in Orman, near Ankara, to be followed by similar farms in other parts of the country. These farms developed into experimental research institutes for plant and animal husbandry and helped to introduce modern farming. In the same way a number of irrigation schemes were promulgated, the most important being the one at Cubuk Dam, completed in 1938, which irrigates more than a million acres. The agricultural bank not only lends money to the peasants, but also buys their produce, distributes seed, and, through the agricultural cooperatives, helps in the marketing.

As a result of these and similar efforts the cultivated area grew from 15,500 square miles in 1927 to 29,900 square miles in 1936. The area under grain and tobacco cultivation doubled, the area under cotton trebled, and the production of sugar cane rose in ten years from 5,000 tons to 70,000 tons. The production of wheat, barley, and rye doubled in the years 1927 to 1934, and the production of cotton rose from 213,000 quintals yearly during the years 1925–29 to 639,000 in 1939.[11] Model farms and breeding depots have helped improve the breeds of cattle, sheep, and fowl.

Special attention has been paid to afforestation. During the First World War, the forests suffered greatly. Kemal Pasha's government tried hard to remedy the situation by setting up nurseries and carrying out afforestation schemes. In 1937 a forestry law was passed, which put all the forests under the administration of the government and provided for conservation of timber resources.

These government measures have greatly increased output and made it possible to export agricultural products as well as building timber, but the process of social transformation is a slow one. Modern farming methods are only gradually being introduced; many of the peasants are still poor, burdened with debts, still using the wooden plow, and most of the villages are still primitive. In July 1945, the national assembly passed a bill for extensive agrarian reform. It provides for division of state and communal domains and large estates among tenants, farmers with insufficient farm land, and agricultural workers. The owners of the land are to receive indemnity paid in 20 annuities together with 4 percent interest. The new owner of the land is supposed to pay the purchase price in installments beginning with the sixth year after receiving the allocation. Provision is also made for furnishing capital for investment, machinery, and animals. This new law, if materialized,[12] may bring relief to the situation of the farm population and change considerably the relations of landownership and, in consequence, also the methods of cultivation.

[10] Egypt became independent in 1922, with Great Britain reserving her rights in the Sudan and the defense of the Suez Canal. Iraq signed a treaty with Great Britain, the mandatory, in 1922, granting partial independence. The mandate was terminated in 1932. The Kemalist republic of Turkey was founded in 1923. Palestine and Transjordan were mandated territories of Great Britain, Syria-Lebanon of France.

[11] These figures as well as those quoted below are from the *Statistical Yearbook of the League of Nations 1942–43.*

[12] So far, little progress has been made in putting the land reform through. In the Republican party—which was the ruling party—the right wing, which apparently has a majority, at the party congress in December 1947, put through a resolution with a view to whittling down the agrarian reform provisions. In the former opposition and today's ruling party—the Democratic party—the big landowners also have considerable influence.

Still fewer have been the social results of the development of agriculture in most of the other Middle Eastern countries. Iraq has abundant water resources, and several kinds of irrigation are in use: flow irrigation is employed on the Euphrates, lift irrigation on the Tigris, and tidal irrigation in the Shath-el-Arab area. The Ottoman government, before World War I, undertook the building of the Hindiya Barrage on the Euphrates and the Habbaniya reservoir. The first was improved by the British during the war. At the end of the 1930s the government finished the rebuilding and construction of the Habbaniya reservoir as well as another irrigation scheme, a dam on the Tigris. Since 1924 private companies have also undertaken irrigation schemes. The Iraq Petroleum Company made some drillings during the construction of the pipe line, and the availability of oil helped to expand the use of pumps for lift irrigation. According to rough estimates, the irrigated area grew from about 200 to about 7,400 square kilometers (from 77 to 2,856 square miles) in the years 1921–29, and has further developed since.[13] But this development was arrested by the unsettled land tenure and by the lack of man power, in addition to loss of strength through malaria which takes a heavy toll every year. To some extent the malaria plague was even fostered by irrigation since "irrigation from the river is carried out in a fashion suitable for the breeding of dangerous mosquitoes."[14] Hence, a strong incentive to develop intensive forms of agriculture was lacking, although some beginnings were made.

Other hindrances were lack of transportation facilities to move the crop and an apparent lack of interest in developing agriculture, although this is the main occupation of the population and agricultural products form the mainstay of the commodities for export. As a matter of fact, with the transfer of government offices from the British to the Iraqi government, the budget of the Department of Agriculture (transferred during the 1920s from the Ministry of Interior to the Ministry of Irrigation and later of Economics), was cut to almost one-third with a great reduction of personnel and research.[15] Generally, about 3,200,000 acres (according to other estimates 4,940,000 acres) were cultivated yearly, which constitutes only about 13 to 17 percent of the cultivable area. Of this cultivated area, about 1,730,000 acres are irrigated, making up about 14 percent of the irrigable territory.

The area actually under cultivation has more than trebled since 1918. The area under cultivation of wheat increased from an average of 1.8 million acres yearly in 1925–29 to 2.3 million in 1936. The area under cultivation of barley fell slightly (from 2.35 million acres in 1925–29 to 2.2 million in 1938), but the yield per unit of land rose still more than in the case of wheat, so that the increase for barley was higher than for wheat.[16] A new branch of agriculture was cotton, which was introduced with British assistance. The British operated experimental farms and paid special attention to cotton. When the initial difficulties had been overcome, the production of cotton began to develop and grew from 3,000 to 26,000 quintals in 1938 and 45,000 in 1940.

Syria also introduced irrigation schemes (in the eastern part) and the irrigated area increased from

[13] Ernest M. Dowson, *An Inquiry into Land Tenure and Related Questions* (Letchworth, 1931), 28. In 1928 one company, the Latifiyah Estates bought 60,000 acres from the government and leased an additional 10,000 acres. The estate, formerly desert land 26 miles from Bagdad, is being watered by pump irrigation. The tenants receive 20 acres for winter crops and 5 for summer crops, against the payment of about 50 percent in kind. In exchange for this, the company offers the tenants certain services besides the land. Keen, *The Agricultural Development of the Middle East*, 29–30.

[14] Ali Ghalib, "Iraq's Enemy Number One," *Palestine and the Middle East*, 16: 233 (December 1944); reprinted from *Malaria in Iraq* (Facts and Prospects in Iraq Series, No. 5). In a similar way the expansion of irrigation in Egypt has influenced adversely the health of the population in some regions. According to the words of Dr. Mohammed Abd-el-Khalik of the Medical Service of Egypt at the Conference of Middle East Agricultural Development held in 1944: "Since the Assowan dam was built and agriculture extended there has been a deleterious effect on the health of the people. You have heard of the malaria epidemics and we also have bilharzia which has increased from 5 percent to 75 percent." Middle East Supply Centre, *The Proceedings of the Conference on Middle East Agricultural Development* (Agricultural Report No. 6, Cairo, 1944).

[15] Henry A. Foster, *The Making of Modern Iraq* (Norman, 1935), 246–247. The number of the so-called permanent staff of the Irrigation Service was reduced from 711 in 1918 to 199 in 1921 and again to 131 in 1925. In 1944 there were 234 persons in this staff. Ahmed Sousa, *Irrigation in Iraq* (1945), 45–46.

[16] The yield of wheat rose from 49 kg. per dunam in the yearly average during 1925–29 to 61 kg. in 1938, and that of barley from 29 to 72 kg. A dunam equals ¼ acre.

212,000 acres in 1922 to 494,000 in 1940. Syria had, however, in the first post-war years, to build up the destruction left by the war. In this way her achievements in the entire inter-war years do not amount to much more than the attainment of pre-war standards of crops and crop areas. Thus the area under cultivation of wheat was 1,235,000 acres in 1914 and 1,334,000 in 1938, barley 790,000 acres in 1914 and 880,000 in 1938. The yield per unit rose in the 1930s by some 20 to 25 percent.

Lebanon has attempted, since 1936, to develop the cultivation of wheat and barley in order to avoid dependence on Syria for these items.[17] In a few years the cultivation of these products increased by 40 percent and more.

A more spectacular development was achieved in the growth of cotton, citrus fruits, bananas, tobacco, and vegetables. Naturally, even these branches suffered fluctuations, and were affected by the crisis in the world market in the first half of the 1930s and by the measures taken by most states to curb imports. Nevertheless, they showed an almost constant increase.

The growth of cotton was fostered by France, who desired to develop the production of raw materials in her own empire. The area under cultivation of cotton, which in 1913 was about 2,000 acres, increased to about 74,000 acres in 1930. After declining somewhat during the depression years, it rose again to 99,600 acres in 1936. The crop amounted to 22,000 quintals yearly at the beginning of the 1930s and to 84,000 quintals in 1938–39. Before 1914 and in the first post-war decade, small quantities of citrus fruit and tobacco were grown in Syria-Lebanon (the former mainly in Lebanon). Later, however, production rose, especially of oranges.

In the years 1925–38 the area under citrus culture increased from 25,000 *dunams* (6,185 acres) to 39,000 *dunams* (9,633 acres). The export of citrus fruit grew from 161,379 cases of lemons and 31,077 cases of oranges in 1934–35 to 167,767 and 544,376 cases, respectively, in 1938–39. In the 1920s about 30,000 *dunams* (7,410 acres) were under tobacco cultivation, with a yield of 1,200 tons; in 1938 the area under cultivation was 40,000 *dunams* (9,880 acres) with a yield of 3,400 tons. The export of vegetables rose considerably in the 1930s, and cattle breeding, with the exception of camels, showed an increase at the end of the 1920s, declined at the beginning of the 1930s, to increase again in 1934. Generally, the number of cattle increased by 60 percent during 1927–38, and the number of sheep and goats doubled in the same period.[18]

Egypt had to cope with special problems. The cultivable area, which is located in the Nile Delta, is extremely limited, its enlargement is possible only with the help of broad, very costly, irrigation schemes. As a result, the growth of the cultivated area has not kept pace with the growth of the population.

Another characteristic of Egyptian agriculture is its monoculture. Over one-third of the cultivated area was used for the production of cotton. In this way Egypt's agricultural life was, until World War II, mainly concentrated around the cultivation and sale of cotton. The fluctuations of the world cotton market and the results of the harvest, therefore, deeply influenced the situation of the country, and a bad harvest and market was accompanied by local crisis.

The government made repeated efforts to develop and improve the cultivation of cotton. For this purpose institutes for research in the improvement of seed and methods of cultivation were organized and both the yield and quality have been greatly raised.

Sugar cane, wheat, corn, and rice are cultivated in addition to cotton. Egypt also has rich crops of vegetables and dates. The sugar cane area and yield increased somewhat, while the yield of rice rose by about 50 percent in the 1930s. During this decade the cultivation of citrus and other fruit was augmented through the government's tariff policy, which aimed to encourage these cultures. As a result, the area under citriculture increased from 6,000 *feddans* (6,240 acres) in 1921–22 to 27,000 *feddans* (28,080 acres) in 1936. The export of oranges amounted to only 6,000 cases in 1930 and 237,000 in 1938.

There was also some increase in the area of cultivation and yield of other products. The area under cultivation of rice rose from 142,000 acres in 1930–31 to 214,000 in 1940, and the crop rose from 4,240,000 quintals in 1930–31 to 8,878,000 in 1939–40. There was also (1925–1939) a rise in

[17] Domestic grain production satisfied only 35 to 40 percent of the country's requirements, the rest being imported from Syria.

[18] The Jesuit farm at Bekaa and the Institute of Rural Life of the American University at Beirut contributed greatly toward introducing varieties of trees and improving the grades of poultry stock.

other agricultural yields which amounted in wheat to 25 percent, in barley to 40 percent, and in cotton to 25 percent.

Neither this increase in production nor the measures taken by the government for conversion of agricultural credits were reflected to any considerable extent in the situation of the landless agricultural workers and the peasants with small landholdings who constitute the vast majority of Egyptian agriculturists. They either had to pay higher interest rates to usurers, or high tenancy rates, which left them no minimum for existence. "The fellah leads a miserable existence, slaves long hours for small pay, lives in dirty quarters, subject to all the sickness of hot countries and lacking possibility of obtaining medicine; his children are weak and most of them die young; those who live start to work in the fields at a tender age."[19]

In Palestine agriculture was extensive, and primitive methods were used; wooden plows, land rarely fertilized with manure, crops hand-sown, and the grain after harvest trodden by cattle on the village threshing floor. Because of these methods and the exhaustion of the soil, the yield was poor and much lower than that of neighboring countries. In addition, malaria, originating from the mosquito-infested swamps, was endangering the health and life of the peasants.

The Jewish immigrants who settled on the land, coming from more advanced European countries, could hardly follow the example of the Arab fellah. Although few of the Jewish settlers had been agriculturists prior to their immigration to Palestine, they did at least have a general idea of the existence of other forms of cultivation. But in the main the higher standards of living to which these settlers were accustomed, the high prices which they paid for the land, and the difficulties they faced in acquiring it made it necessary for them to try to change the methods of cultivation.

The first requirement was to make the region healthful. Reclamation work was started as a matter of expediency. At the beginning of Jewish settlement work, the Jewish settlers suffered as much from diseases, mainly malaria, as did the Arabs. Some places were even abandoned by them as a result of the depletion caused by malaria. It became clear that a larger settlement could be completed only if malaria were eradicated by removing its cause, the swamps. The most infested and swampy parts of the country were those which were the least populated, and accordingly, most suitable for large-scale new settlement. The Valley of Jezrael and the Maritime Plain, in which Jewish colonization in the post-war period was mainly concentrated, belonged to the most swampy and malaria-infested regions. In both localities the drainage work was done by Jewish colonizational agencies (the Jewish National Fund, the Palestine Jewish Colonization Association, and others); the anti-malaria work started by the Malaria Research Unit, founded in 1922 by American Jews and continued by Hadassah, and that of the government Department of Health, helped to reclaim entire regions. The Valley of Jezrael and the Maritime Plain and the Valley of the Jordan are now among the most fertile regions of the country and are mostly, with the exception of the northern Huleh marshes, malaria free.

The next step was to change the methods of cultivation in order to raise productivity and yield. The Jewish farmers were compelled to employ more efficient methods of cultivation than those of the Arabs. Diversified farming was introduced, new fruits were cultivated, truck farming was developed, and better breeds of cattle and poultry were raised. Cereal cultivation was abandoned to a considerable extent in favor of citrus cultivation, dairy farming, poultry raising and vegetable cultivation, the crops of which were designated for the local market. This kind of husbandry as well as some grain cultivation could be intensified primarily by irrigation. From 1933 to 1936 Jewish companies made 473 borings, of which 396 were successful. Before World War II, about 100,000 acres (of a total cultivated area of 1,300,000 to 1,500,000 acres) were irrigated.

In the inter-war years Jewish growers introduced the cultivation of table grapes under irrigation, as well as avocadoes. In the 1930s the growing of apples, pears, plums, peaches, apricots, and strawberries on a commercial basis was developed.

These innovations in agriculture, introduced by the Jews, did not fail to influence a section of the Arab peasantry. This, together with the demand for agricultural produce created by the immigrants, induced some of the Arab *fellaheen*, mostly those who lived near Jewish agricultural settlements, to follow their example. This development was advanced also by the government experimental

[19] A. S. el Amary, "La Structure economique de L'Egypte," *L'Egypte Contemporaine*, February-March 1937, p. 204.

farms and stations, which sometimes took over certain methods from the Jewish settlers and utilized the results of the research done by Jewish groups or developed them further. They tried to introduce these innovations to the Arab peasants by teaching them more scientific methods and by distributing to them seeds and saplings.

The area under cultivation grew in the interwar years from about 5,000,000 *dunams* to about 7,000,000. Arab mixed farming developed slowly. "Native cows of the Arab peasant yield from 130 to 185 gallons of milk a year, whereas the cows bred by the Jews by crossing Dutch pure bred bulls and native Damascus cows, produce an average of about 1,050 gallons a year. The native hen of the Arab peasant produces about 70 eggs a year. Through the introduction of Leghorn breeds, however, the Jews have developed a fowl which averages more than twice this production per hen."[20]

The main expansion was in citriculture, fruit trees, and vegetables. The area under cultivation of citrus increased five-fold in less than ten years, of olives (mainly Arab) about four-fold in the postwar period, while that of vegetables grew almost six times in the years 1922–1940.

This development affected both the Jewish and the Arab agricultural population, although in some branches the growth was more rapid among Jewish (citrus, dairy) growers, while in others (olives) it was more rapid among the Arabs.

Area under Citrus Cultivation in Palestine (in dunams)

	Total	*Jewish*	*Arab*
1927	60,800	24,000	36,800
1931	129,000	70,000	59,000
1935	283,000	153,000	130,000
1938	299,500	155,500	144,000

The production of vegetables in Arab agriculture increased from 11,000 tons annually in 1921–26 to 160,000 annually in 1939–43. The number of cattle more than doubled during 1921–1943.

The social implications of these developments could be gauged from the fact that the rural Moslem and Christian population grew by 50 to 60 percent in the years 1922 to 1940, and that the financial situation of the fellah has slowly improved because the growing cities created a good market for his products.

All these developments, however, in reality changed the structure of agriculture in the Middle East very little. It has remained a region of low productivity. "The net productivity of a male earner occupied in agriculture has been calculated [on the basis of 1934–35 crops] to be 90 to 98 international units in Syria, Lebanon, Turkey and Egypt . . . and 148 in Arab Palestine, against 429–580 units in Western Europe."[21]

Despite the agricultural character of the region its food production was hardly sufficient to feed the population. This was brought clearly to the fore when war broke out in September 1939 with the subsequent cutting of the sea lines. Turkey and, in part, Egypt were the only nearly self-sufficient areas in agricultural production. Palestine was importing 45 to 50 percent of its food supply, and Transjordan imported such commodities as sugar, rice, wheat, flour, oil, and cattle, Lebanon, too, needed food imports. At the same time, the Allied armies which poured into these countries needed additional food supplies, and shipping space was scarce and had necessarily to be conserved. On the other hand, the countries which grew staples for export (Egypt, cotton; Palestine, citrus fruits) could not bring their commodities to market. This two-way crisis with which the Middle East (and the Allies there) was faced brought about a number of changes which will probably continue to exert an influence in the years to come. All the Middle Eastern countries evolved a policy of reducing food imports and increasing local production.

At the same time, however, inflation evolved, leading to price rises ranging from a cost of living index of 275 in Palestine (by the end of 1946; taking 1939 as 100) and 294 in Egypt to 342 in Turkey, 553 in Syria and Lebanon, and 567 in Iraq. The rise in agricultural prices amounted to 400–500 in Palestine and Egypt as compared with 190 in Great Britain and 192 in the United States (at the end of 1944).

This rise in prices stimulated production and thus contributed to a certain improvement in the

[20] N. W. Hazen, "Agriculture in Palestine and the Development of Jewish Colonization," *Foreign Agriculture*, 1: 126 (March 1937). The body weight of fowl increased from 2.6 to 3.9 lbs. and the egg weight from 1.4 to 1.9 ounces.

[21] *Economist* (London), July 15, 1944; Alfred Bonne, *State and Economics in the Middle East* (London, 1948), 210. The international unit is the terminology used by Collin Clark in expressing the purchasing power of dollars in the years 1923–34.

situation of the peasants in some of the Middle Eastern countries. But at the same time it transformed the Middle East from a low-cost region to one with the highest cost of living in the world. This makes its produce more expensive on the world market. Iraq's dates, Turkey's nuts, tobacco, and lumber, Palestine's citrus, and Egypt's cotton have, or will have, difficulties in marketing if the inflated prices are not cut by larger productivity, changes in social structure of landholding and improvement in agriculture by large-scale irrigation and amelioration.

DOMITZER'S *PFLANTZBÜCHLEIN*

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The pursuit of old books often has a zest out of all proportion to the merits of the works themselves.[1] This is true of the *Pflantzbüchlein* of Johann Domitzer, presumably the oldest German printed work on the culture of fruit trees. It is rare because of its age and ephemeral form, and particularly elusive because its contents were too unimportant to be preserved or even remembered.

The oldest known edition of this work has not been located, and there is some question whether it was actually the first to be printed. But there are several early issues in European libraries that appear to be authentic, and have fairly uniform texts. Furthermore, an important manuscript has recently been found, a genuine document for the history of fruit growing, which proves to be a leading source of Domitzer's tract; and while much still remains to be learned about the *Pflantzbüchlein*, it now seems desirable to print the available data.

The vernacular works in this field printed early in the sixteenth century are largely compilations from the Latin agricultural classics or Crescenzi, supplemented by fantastic medieval lore, and sometimes rudimentary ideas of propagation practiced by individual gardeners. But Domitzer's booklet has left no traces in the history of fruit growing. Persistent search in early German agricultural works yielded a bare mention of its author, though its title, often in garbled form, is found in many bibliographies of botany and agriculture. Many of the old records are traced to one original entry, which has been altered beyond recognition by successive bibliographers, and our knowledge of the work is obscured by serious misconceptions.

The Mythical Latin Edition of 1547. One of the worst errors occurred in an excellent bibliography. Seguier's *Bibliotheca botanica*[2] gives the title: "Donizer (Joannes). *De stirpium cultura.* Francofurti, 1547. in 8. Ex Camer. Cat." This last refers to the list of books in the *Eklekta Georgika* of Joachim Camerarius the Younger,[3] where this work is listed in a section for books in the German language, with all the titles and even the names of authors Latinized. Seguier usually cites Camerarius with the note, *Germanicè*, but omits it here. Whether this Latin title was adopted through mistaken confidence in Seguier or mere carelessness, it has been copied by bibliographers from one generation to another, and is found in nearly all listings of the *Pflantzbüchlein*.

Apparently nobody tried to verify Seguier's citation or examine its source. The work had already been listed by Camerarius in 1577 as "Ioan-

[1] This study includes a good deal of conjecture and personal opinion which must be evaluated by the reader. It is hard to develop a coherent thesis from fragmentary material, and while I have tried to omit spadework, it has been necessary to use some clews that have been vainly or only partly explored, and to piece out facts with theories. My verification of citations and search of background literature was done long ago in the U. S. Department of Agriculture and Library of Congress; but of late I have lived in virtual isolation, and the tracing of obscure allusions and gathering of data from rare works have been possible only through the courtesy and cooperation of widely distributed libraries and scholars. It is impracticable for me to acknowledge their individual help, but it has been as gratefully received as it has been indispensable in my task.

[2] J. F. Seguier, *Bibliotheca botanica* (Hagae Comitum, 1740), 358.

[3] Joachim Camerarius, *Eklekta Georgika* [Greek], *sive Opuscula quaedam de re rustica* (Norimbergae, 1596), 231.

nis Donitzer [sic] *pflantzbüchlein.* in 8. anno 1547. Francof.",[4] which seems to be the oldest record of the work, though it is never cited, and no copy of this date has been located.

This misinterpretation was partly due to the iniquitous practice of translating titles, but aggravated by the spelling "Donitzer" in the original citation of Camerarius, who further Latinized the name as "Donizer," afterwards corrupted into "Donnitzer" and "Domnitzer". Although it was spelled correctly in early editions of the *Pflantzbüchlein* and by some bibliographers, the supposed Latin version was not at first correlated with the actual work. It had been translated into Danish, and in 1829 Winther[5] gave the Latin title together with the "*Plantebog.* Kbh. 1602, 1635, 1639," under Johann Domitzer. Then in 1851 Pritzel[6] brought the translations together with the German titles under this name, which has since been generally used. But the mythical Latin title had gained such acceptance that Pritzel implicitly retained it, although he noted a few of the speculations about the *Pflantzbüchlein* and its elusive author.

The Domitzer-Lonitzer Complex. It did not take long for such an ephemeral publication to become practically extinct. In 1771, Haller quoted the Latin title with a query: "*An forte Loniceri opus*" (perhaps a work of Lonitzer).[7] This could have been due to similarity in the sound of the two names, or to the supposition of a typographical error, but Haller had better grounds for his theory, although he did not explain them. His knowledge was wide, and he doubtless recollected the chapter on gardening in many of the herbals of Adam Lonitzer (1528–1586). While he could not have known whether Lonitzer borrowed from the *Pflantzbüchlein*, he might readily suspect the little work credited to "Donizer" actually came from an author whom he knew to be exceedingly prolific. He did not know that it had been previously published as early as 1529, when Lonitzer would have been only a year old. This question of age has been brought out by Roth,[8] in an analysis of Lonitzer's principal works, to which the title of the 1530 *Pflantzbüchlein* was added by way of confirmation.

However, Haller's idea was a challenge, and many years ago I found parallels between an anonymous and probably garbled issue of the *Pflantzbüchlein*, and the introduction to Lonitzer's *Vollständiges Kräuter-Buch* of 1783,[9] which is in two parts: "Von bauung der gärten und pflanzung der bäume," and "Von dem impffen, pfropffen oder pelzen der bäume." More recently a genuine early edition of the *Pflantzbüchlein* has been checked with Lonitzer, and his chapter, "Von dem impffen, pfropffen oder pelzen der bäume," proves to be largely a rearrangement of Domitzer's tract. Many copies of Lonitzer's herbal have been examined, including the original *Kreuterbuch* of 1557,[10] and this chapter seems to be practically the same in all. There were innumerable issues, some of them typographically superior, and others quite cheap, as the work was meant to be popular, and continued to be one of the best known and generally used household works for a couple of hundred years. Thus Lonitzer's data on gardening and grafting were so common that Haller might have naturally supposed him the author of any unknown or extinct work on the subject in the middle of the sixteenth century.

Egenolff's Piracies. Haller's query had another slant that may not have occurred to him. Lonitzer's father-in-law, Christian Egenolff, a Frankfurt printer of great ambition and enterprise, was a good deal of a pirate, and Lonitzer, who served as his "editor," doubtless used a lot of borrowed material. It was legitimate enough to reprint the *Pflantzbüchlein*, but Egenolff's combinations and disguises made problems for the bookman.

The text on gardening in Lonitzer's herbals contains illustrations of arboricultural procedures that would be appropriate to the *Pflantzbüchlein*, but while several editions of that work have title-vignettes, only one has text figures, and not all of those given in the herbal. The latter are all found in Lonitzer's *Naturalis historiae opus novum*,[11] in

[4] *Ibid.*, *De re rustica opuscula nonnulla* (Noribergae, 1577), f.52.

[5] Mathias Winther, *Literaturae scientiae rerum naturalium in Dania, Norvegia & Holsatia usque ad annum MDCCCXXIX, Enchiridion in usum physicorum & medicorum* (Havniae, 1829), 151.

[6] G. A. Pritzel, *Thesaurus literaturae botanicae* (Lipsiae, 1851), no. 2674.

[7] Albrecht von Haller, *Bibliotheca botanica* (Tiguri, 1771), v. 1, p. 297.

[8] F. E. W. von Roth, "Die botaniker Eucharius Rösslin, Theodor Dorsten u. Adam Lonicer," *Centralblatt für Bibliothekswesen*, 19: 271–286 (1902).

[9] Adam Lonitzer, *Vollständiges Kräuter-Buch* (Augsburg, 1783), 33–45.

[10] *Ibid.*, *Kreuterbuch* (Franckfurt am Mayn, 1557), teil 4, f.LXIX^{v}–LXXIII^{r}.

[11] *Ibid.*, *Naturalis historiae opus novum* (Francofurti, 1551), f.1–10.

its introductory chapter, "De horto," which is not the same as the German introduction of the herbals, but consists solely of extracts from Latin agricultural writings. It was published in 1551 by Egenolff, who in 1545 had bought the printing business of Heinrich Steyner of Augsburg, with the latter's wood blocks, many of which later appeared in Egenolff's publications. Steyner had printed an edition of the *Pflantzbüchlein* with part of these illustrations, but the origin of the others has not been found; they may have been drawn for the *Naturalis historiae opus novum*; or they may have been intended for some extinct or undescribed publications by Steyner, such as a finer copy of the *Pflantzbüchlein* itself, or a work of similar content.

Furthermore, Egenolff was definitely responsible for confusing the *Pflantzbüchlein* with the *Lustgärten und Pflantzungen mit wunsamer zierd*,[12] a contemporary tract by an unknown compiler, which he printed at Strasburg in June, 1530. In November of the same year it was issued at Augsburg by Steyner, who reprinted it in November, 1531, but apparently it was never reissued by Egenolff under that title. In 1546, however, after acquiring Steyner's business, he published the *Pflantzbüchlin der Lustgärten*, the text of which is practically identical with the *Lustgärten* of 1531. This was several times reprinted under the same hybrid title, with some additions; and some years later an almost undistinguishable title was used for anonymous and expanded issues of Domitzer's work. It is not likely that Egenolff had anything to do with the latter, but there is no question that the *Pflantzbüchlin der Lustgärten* was a deliberate hoax. Egenolff had plenty of opportunity for plagiary, and committed major offenses in the field of botanical literature but this minor performance was probably the excuse for a long line of garbled pamphlets on gardening, among which it is almost impossible to distinguish the *Pflantzbüchlein* from the *Lustgärten* in bibliographical records.

Editions of Domitzer. Our knowledge of the *Pflantzbüchlein* is incomplete without the first edition, which has not been located, but several early issues in European libraries have been examined in photostat. The oldest citation known to me is that of Camerarius in 1577,[13] but the supposed original edition, printed at Zwickau in 1529, was apparently not described till 1872, in Pritzel's *Thesaurus literaturae botanicae*.[14] This entry is noteworthy, because the revised *Thesaurus* omits all non-botanical works, including the data on Domitzer's tract that are given in Pritzel's first edition in 1851.[15] The record of the 1529 *Pflantzbüchlein* was a lucky exception to the rule; although,

[12a] *Lustgärten vnd Pflätzungen/Mit wunsamer zierd/artlicher vnnd seltzamer verimpffung/allerhand Bäum/Kreutter/Blümen vnd früchten/Wilder vñ heymischer/Künstlich vnd lustig zü zürichten... Wes sich ein Haussvatter mit seiner Arbeit das Jar uber/Alle Monat in sonderheit/halten soll.* Strassburg, bei Christian Egenolph. xxiii ff. title-vignette. Colophon: Zü Strassburg bei Christian Egenolphen/Im Brachmon/Des M. D. vnd xxx.iars. (Lindley Library, London).

[b] ——Augsburg, durch Heinr. Stayner an dem v. Nov. MDXXX. (Zapf. G. W., Augsburgs Buchdruckergeschichte, 2. th., p. 197, 1791). (Not located).

[c] —— *Lustgärtlē vñ pflantzungen/Mit wunsamer zyerde/artlicher vnd seltzamer verymffung/aller handbeüm, Kreüter/Plümen vnd Früchten . . . zü zürichten . . . M.D. XXXI.* xxiii ff. sig.A–F. title-vignette. Colophon: Getruckt zü Augspurg durch Heinrich Steyner am xxi. tag Novembris des M.D.XXXI. Jars. (Library, U. S. Department of Agriculture, Washington).

Title and text as in 1st ed., with minor verbal variations.

[d] —— *Pflantzbüchlin der Lustgärten, Mit wunnsamer zierde artlicher nutzbaren und seltzamen impffung allerhand Bäum, Kreuter, Blümen und Früchten . . . zü zürichten. Auch darbei eins Haussvatters ordenliche arbeyt durchs gantz jar auss. Auss. Theophrasto, Plinio, Varrone, &c.* Franckfurt am Mayn, Getruckt bei C. Egenolffen [1546]. xlvii ff. sig. A–F⁷. title-vignette. (Library, U. S. Department of Agriculture, Washington).

Text practically identical with that of preceding edition.

[e] —— *Pflantzbüchlin der Lustgärten . . . Auss Theophrasto, Plinio, Varrone, &c. Bawren Practica, oder Wetterbüchlin, wie mann die witterung durch das gantze Jar erlernen und erfaren mag, von jar zu jar werende.* Franckfurt, Bei C. F. Egen. erben, M.D. LXIIII. 80 ff. sig. A–E⁸. illus. (Library, U. S. Department of Agriculture, Washington).

Text as in preceding editions, with added "Wetterbüchlin."

[13] Camerarius, *De re rustica opuscula nonnulla*, f. 52. "Ioannis Donitzer [sic] pflantzbüchlein. in 8. anno 1547. Francof."

[14] G. A. Pritzel, *Thesaurus literaturae botanicae . . .* (ed. nov., Lipsiae, 1872), no. 2363. "Domitzer, Johann. Ein news Pflantz/buechlein, Von/mancherley artiger/Pfropffung vn Bel-/tzung der Bawm. Gedruckt zu Zwickaw/durch Gabriel Kantz. M.D.XXIX. 8. 28 foll."

[15] *Ibid.*, *Thesaurus literaturae botanicae* (Lipsiae, 1851), no. 2674. "Domitzer, Johann. Ein newes Pflantzbüchlin von mancherley artiger pfropfung und beltzung der beym. Getruckt zu Augspurg durch H. Stayner, 1534."

With other editions and bibliographical notes.

as one does not expect to find horticultural works in the revised *Thesaurus*, it is often overlooked.

No copy answering to Pritzel's description has since been found. *The Bradley Bibliography* gives one with date 1529, which must have been seen in Europe by Dr. Rehder, but its library location is unknown.[16] Its title differs from that of Pritzel; it has no imprint; and its pages are counted in brackets; so one can get little idea about it. It could not have been the copy described by Pritzel, but its title is like that of a copy dated 1530, in the Stadtbibliothek of Mainz.[17] At the risk of multiplying errors about this work, I submit that the copy seen by Dr. Rehder could have been a prior issue of the 1530 edition in the Mainz library. Moreover, its date, 1529, raises the question that it may be earlier than the copy printed at Zwickau in the same year, as the difference in their titles suggests that the two were printed from distinct manuscripts.

The 1530 edition at Mainz corresponds in part with one of 1531 in the Lindley Library of the Royal Horticultural Society in London.[18] Each consists of twenty-four leaves in octavo, gives neither place nor printer's name; includes the quotation from Genesis 2:8 in the title; and gives Domitzer's name at the end of the preface; but they otherwise differ considerably.

The 1530 copy not only has a more expanded title, with differences in wording, but the text, while substantially identical as to contents, shows linguistic variations in spelling and substitution of terms. I do not have the dimensions of their pages, but the typography of the 1530 edition is rather clearer, with more open spacing, better paragraphing and headings. Both copies have a very pious preface of some eight pages, which in that of 1530 begins on the second recto and ends very neatly on the fifth verso; while in the 1531 copy it begins on the verso of the title and ends in the middle of a page, with the main text immediately following. These copies are obviously from different manuscripts or prior issues. Although they do not have vignettes, their titles are bordered with ornamental motives, and the 1530 edition has a figure at the top that is probably a raspberry or blackberry, and at the foot an unmistakable strawberry with fruit, flower and leaf. The work does not anywhere refer to these fruits, which are mere decorations.

The edition printed by Steyner, Augsburg, 1534,[19] is distinguished by eight woodcuts of arboricultural processes. Five of these are among the illustrations of Lonitzer's *Naturalis historiae opus novum* (1551); the rest are unfamiliar and inferior, though one of them is interesting because it shows that ancient example of in-arching, a grape vine grafted into a cherry tree. Steyner's edition gives the author's name in the title, and omits the greater portion of the long, pious preface of the two copies previously described. So far as I have compared them, the contents are essentially the same, but with individual variations in spelling.

The British Museum has a copy printed at Frankfurt in 1551.[20] Although it contains all the essential text, it has the abridged preface of the 1534 edition, and omits a few miscellaneous paragraphs towards the end of the work. Besides these four dated editions, the Österreichische Nationalbibliothek in Vienna has a copy without place, date, or printer's name, but with contents practically like those of 1531 and 1534. It is distinguished by a title-vignette, which may afford a clew to its printer and date.[21]

[16] Alfred Rehder, *The Bradley Bibliography . . . Compiled at the Arnold Arboretum of Harvard University* (Cambridge, 1915), v. 3, p. 135. "[Domitzer, Johann] Ein neüwes fast hübsch unnd nutzliches pflantzbüchlin von mancherley artiger pflantzung, impffung un beltzung der bäum. [45] p. n.p., 1529."

[17] [Johann Domitzer], *Ein neüwes/fast hübsch/vnnd nutzliches Pflantzbüchlin/Von mancherley artiger Pflantzung/Impffung/vñ Beltzung der Bäum. Gene. ii. Gott der Herr Pflantzete einen gartē in Eden gegen dem morgen, vnnd setzet den menschen drein/den er gemachet hatte.* M.D.xxx. [24] ff. sig.A–C. Author's name at end of preface: "Johan Domitzer". (Stadtbibliothek, Mainz).

[18] [Johann Domitzer], *Ein new Pflantzbüchlein vonn mancherley artiger Pfropffung vñ Beltzung der Baum. Gene 2. Gott der Herr pflantzete einen Garten inn Eden [etc.]*. 1531 [24] ff. sig.A–C. Author's name at end of preface. (Lindley Library, London; Österreichische Nationalbibliothek, Vienna).

[19] Johann Domitzer, *Ein newes Pflätzbüchlin/Von mancherlay/artiger pfropffung vnd beltzung der baum. Johann Domitzer.* M.D.XXXIIII. [27] ff. sig. A-Diii. title-vignette, 7 figs. Colophon: Getruckt zu Augspurg durch Haynrich Stayner am 5. tag Octobris M.D. XXXIIII. (Landbouwhoogeschool, Bibliotheek, Wageningen, Holland; Österreichische Nationalbibliothek, Vienna).

[20] *Ibid., Pflantzbüchlin/Von mancherley artiger Pfropffung vnd Beltzung der Bäum. Johann Domitzer.* M.D.LI. 28 ff. sig.A-Diii. title-vignette. Colophon: Gedruckt zu Franckfurdt am Mayn, durch Herman Gülfferichen. Printer's device, f.28, verso. (British Museum).

[21] Letter of Dr. Mülher, Leiter der Katalogabteilung, Österreichische Nationalbibliothek, Wien, Oct. 11, 1950.

I have sometimes questioned whether the later anonymous issues, enlarged by other material, ought to be considered editions of Domitzer. But two copies printed in 1587[22] and 1598,[23] under the title: *Pflantzbüchlein von mancherley artiger Lustgärten*, have been compared with the editions of 1531 and 1534, respectively, and found to contain the essential portion of the earlier texts. The introductory pages of the 1587 copy are changed quite significantly by the addition of a lot of weather lore, which is conspicuously lacking in the oldest issues; but the pages on propagation and culture are almost exactly reproduced. The latter part of the 1587 copy consists of unassorted matter, some of it utterly absurd and some mere repetition of maxims in the first part. Some of this added matter may have been taken from the *Lustgärten und Pflantzungen* of 1530, but at any rate it appears that the *Pflantzbüchlein* itself and its later supplements must have been derived from common sources; and that the later printers tried to make the tract more imposing by adding text from earlier works.

There is an issue apparently similar to the preceding two in the Bibliothèque Nationale, Paris.[24] It has almost the same title as that of 1587, but is undated. It has, however, the imprint of Johann Georg Hertzen (or Hertz) of Erfurt, and a title-vignette showing an apple-tree, a pear tree, and a cabbage-field. This cut is suggestive of the fact that Erfurt was important as an early center of vegetable culture, which is hardly mentioned by Domitzer. The title-vignette may have been the usual device of a local printer, or it may have been used to recommend the booklet to the market-gardening community.

The foregoing may be only a few out of many existing copies of the *Pflantzbüchlein*. Exhaustive search of catalogs might bring out further copies and other editions, but mere titles are inadequate, and it is useless to multiply citations that cannot be verified. I have neglected the Danish editions, and have not tried to examine dateless issues. The four editions described in detail, 1530, 1531, 1534, and 1551, are virtually alike in contents, though their prefaces vary, and they have dialectical peculiarities that imply the existence of several distinct manuscripts or prior printings. All four copies are in libraries, and may serve as bases of comparison for others that may come to light. Several of those listed in old bibliographies cannot be presently located; while on the other hand, two of those examined are not in any old list; and there is reason to expect that many more copies exist, even though some previously recorded editions have totally disappeared.

Although I have made notes from different editions, all have been checked with that of 1530, because it is the earliest thus far located. I have not tried to compare dialects, which is a task for a linguist. In referring to the work, I have uniformly used the spelling *Pflantzbüchlein*, save where it is spelled otherwise in particular titles. This is the modern High German usage, and is found in Pritzel's entry for the presumptive first edition by Gabriel Kantz, Zwickau, 1529. But the spelling *Pflantzbüchlin* occurs in the 1530 edition and its possible prototype of 1529 in the *Bradley Bibliography*, as well as many later reprints, and may well be that of the oldest printings or prior manuscripts.

The Author and His Book. Owing to the fact that the author's name is given only at the end of the preface in some editions and is lacking in others, the *Pflantzbüchlein* is often treated as anonymous. Hence Johann Domitzer has sometimes seemed almost as much a bibliographical myth as the supposed Latin version of his work. But the booklet itself proves him a veritable person, though it is clear from its preface that he was a mere compiler.

This preface, though shortened in some issues, always contains an encomium of husbandry, and the statement that the author got his information on arboriculture from an industrious person experienced in that business, and what had been written by others on the subject. The writer was tolerably literate, with some knowledge of history

[22] *Pflantzbüchlein/von mancherley artiger Lustgärten/ nutzbarn und seltzsamen pfropffung von allerhand Bäumen/Kräutern/Blumen vnd Früchten, wilder und heymischer &c. Zum andermal ersehen/ vnnd mit nutzlicher Lehr/von auff und niedersteigen dess Mons/zu glücklicher Pflantzung nötig/gemehret.* Getruckt zu Franckfurt am Mayn [durch Nicolaum Basseum] M.D.LXXXVII. 81 p. title-vignette. Colophon. (U. S. Department of Agriculture, Washington).

[23] *Pflantzbüchlin. Von mancherley artiger Lustgärten* ... Leipzig, 1598. 79 p. (Landbouwhoogeschool, Bibliotheek, Wageningen, Holland).

[24] *Pflantz Büchlein von mancherley Artiger Lustgärten, nutzbaren und seltzamen Pfropffung von allerhand Bäumen, Kreutern, Blumen und Früchten, Wilder und Heimischer, etc. Zum andern mal übersehen, und mit nützlicher Lehr, von auff und niedersteigen des Monds zu glücklicher Pflantzung nötig gemehret.* [n.d.] 72 p. title-vignette. Colophon: Gedruckt zu Erffurdt, bey Johann Georg Hertzen. (Bibliothèque Nationale, Paris).

and a good command of contemporary German. He was exceedingly pious, and stresses the divine institution and approbation of agricultural pursuits. His parallel between the spiritual life and the growth of the tree, in some of the prefaces, indicates piety rather than horticultural experience. He was distressed by the neglect of agriculture in favor of trade, which he regarded as an instrument of the devil. I accept his statement that he compiled this booklet as an aid and encouragement to the godly life of the husbandman, and think it probable that Domitzer may have been a priest, concerned for both the material and spiritual welfare of his flock.

The fact that it was drawn from the lore of an experienced gardener, together with gleanings from other sources, is suggested by the contents, which give practical directions as well as many old superstitions. The work may be said to roughly consist of two parts: a general treatise on the planting and care of trees, and a section of detailed instructions for grafting, budding, and special techniques of propagation, followed by miscellaneous recipes and maxims dealing largely with pests and diseases of trees. In spite of many absurdities, much of the text is coherent. Its idiosyncrasies may be due in part to Domitzer's handling of topics, but some of them may have come from the manuscripts or earlier printed leaflets from which he faithfully copied his text. For in my opinion the *Pflantzbüchlein* was not widely selected, but almost literally transcribed from not more than two sources. Parts of its text can be exactly identified, and much of the remainder suggests that it had been arranged and digested by a previous compiler.

The tract is disappointing in its lack of individual flavor or local customs, or ancient names of fruits of a region or period. It gives sound methods of propagation, which are in part inherited from the classic Roman agriculturists, as well as remedies and recipes that savor of folklore, which may have arisen in the Middle Ages.

It has been suggested that the absurdities in some other old tracts on gardening must have been mainly drawn from the *Geoponica*, a title somewhat loosely applied to the agricultural information compiled by Cassianus Bassus, probably during the reign of Constantinus IV (648–685), and often credited to that monarch. It was either extensively revised or completely replaced by a new collection by an unknown writer about 950, in the reign of Constantinus VII, "Porphyrogenitus," who is also credited with its authorship. I am not familiar with either collection, but while I know that they contain many agricultural superstitions, the *Geoponica* would have been too remote in both time and temper to account for these fifteenth and sixteenth century gardening works. The occurrence of such similar material in works widely separated in locality and language points to a distinctive body of lore about fruits and their culture, widely distributed in Europe towards the close of the Middle Ages, perhaps not long before the era of printing. Nothing of the kind has been cited, but recently a manuscript has been found that could have supplied the contents of many of these early works, and certainly did form a large part of the *Pflantzbüchlein*.

A Medieval Manuscript. Gottfrieds Pelzbuch, by Gerhard Eis, is a study of many aspects of the manuscript of Gottfried von Franken, showing its dissemination at different dates, by means of copies in various languages and dialects, throughout a large part of Europe.[25] As Gottfried's name is not found in most of the manuscripts, their contents have been distributed anonymously and have practically become part of the indigenous culture of some regions. His work originally comprised a fruit book and a wine book, and the latter, which is lacking in many copies, was undoubtedly the basis of many ancient tracts on wine making; while the contents of the *Pelzbuch* became absorbed and have been perpetuated by writers on agriculture and natural history well down through the seventeenth century. The oldest manuscript that has been definitely traced goes back to the third quarter of the fourteenth century, and the work was still being copied in the early years of the sixteenth, when its reproduction in manuscript was checked by printing. Gottfried's work was never printed as a whole, but it is likely that portions of his manuscripts were printed as crude tracts on gardening that have never been identified or traced to their sources.

Dr. Eis discusses many possible sources of the work, but concludes that most of it came from Gottfried's practical experience and personal observation. He had opportunity to get an encyclopedic knowledge of fruit culture at first hand. He

[25] Gerhard Eis, *Gottfrieds Pelzbuch; Studien zur reichweite und dauer der wirkung des mittelhochdeutschen fachschrifttums* (Südösteuropäische arbeiten, 38, Brünn, München, Wien, 1944). *Ibid., Studien zur altdeutschen fachprosa* (Heidelberg, 1951), 47–79.

may have been one of those journeyman grafters who went about in the Middle Ages improving trees for unskilled owners, but he was an educated person, and probably had some means, as he refers to a vineyard he had owned in *Banonia* (Bologna). His native locality was Franken or Franconia and he mentions the cities of Würtzburg and Bamberg and the Bavarian mountains, but his travels ranged westward as far as Brabant and as far south as Calabria in the heel of Italy's boot, and he more than once refers to matters he had learned in Greece or in Athens.

Although he had some education, Gottfried apparently did not compile his lore from books. He does not mention the Roman agriculturists, Cato, Columella, and others, though he knew practically all their basic methods which were presumably always more or less used by skilled craftsmen, albeit sometimes perverted by variations and experiments. Gottfried names a few old authorities he might have known through the *Geoponica*, or possibly through oral tradition. He was catholic in collecting everything on his subject, though he sometimes admits that he had not personally tried out a particular recipe for himself. It is doubtful that he invented new methods, but he records a large number of variations on established principles, and picked up a few procedures that may have been of recent origin. The significant point is not the novelty but the universality of his knowledge. Gottfried brought together, sometimes from remote regions, sometimes from obscure oral traditions, about all that could have been known about the propagation of fruit trees in his time, and presented it in a plain and vigorous style. I am not sure but there were other compilations of similar scope, but Gottfried's manuscript was certainly the first German handbook of practical experience in the techniques of grafting and propagation. It reveals the author as a distinctive personality with an independent and experimental mind. His own individuality, as well as his vigorous mode of expression, were undoubtedly factors in the rapid dissemination and long preservation of his ideas. Each new copy of the *Pelzbuch* represented a fresh center of fruit growing, and Gottfried's maxims became almost proverbial and were quoted as matters of common knowledge.

From the bookman's point of view, the *Pelzbuch* of Gottfried von Franken is a critical document. Dr. Eis has examined a great deal of early literature in natural science and agriculture, and finds correspondences, and even almost verbal quotations from Gottfried, in scores of notable works, not only in German, Czech, Polish and Latin, but also in French, Italian and other languages, which show that his influence persisted down to the eighteenth century. Although it is impossible for me now to re-examine the many old works on gardening that have baffled me because of their repetition of nearly identical recipes, I do not doubt that much of their contents was derived from Gottfried's work, and that many of them may have been largely copied from it.

Methods of Propagation. Subject matter is not the usual province of the bibliographer, but since portions of Domitzer's *Pflantzbüchlein* are almost directly quoted from Gottfried's *Pelzbuch* and both works are rather inaccessible, some idea of their contents is essential. In my efforts to understand and classify fourteenth century methods, I have been obliged to refer to older or more modern procedures, perhaps sometimes incorrectly; hence my comments are by no means final or authoritative.

Domitzer did not, of course, include all the *Pelzbuch*, but the second part of his booklet, on special modes of grafting and propagation, is substantially copied from Gottfried, together with notes on strange "grafts," on pests and diseases of trees, and much miscellaneous information. In general he follows Gottfried's directions rather literally, but sometimes, in writing them in contemporary German, he restates or rearranges them. It should be understood that methods credited to Gottfried in the following pages are those which are copied in the *Pflantzbüchlein*, except in some instances where Domitzer's omission is noted.

Gottfried's methods comprise those laid down long ago by the classic Roman agriculturists: cleft grafting and bark grafting, with numerous variations, and the mode of veneer or scutcheon budding described by Cato, which Domitzer calls *emplastrum*, from the Roman term *emplastratio*. To these are added a method which Gottfried found in Calabria, sometimes called *geschleifft* or "slipping," apparently a mode of flute budding in which the bark is removed for a certain distance from a shoot of a finger's thickness; and a cion of the same thickness, hollowed out so as to leave a ring of bark, is carefully fitted over it, and the joining neatly plastered. This operation was said to be very "subtle, delicate, and clever," but well adapted to multiple grafting on wild trees.

Gottfried describes a couple of ways of propagation that may have been of recent origin: one, a mode of rooting saplings practiced in Brabant, by thrusting shoots into holes bored through a log or plank of willow or beech, which was partly buried in the earth, and the following year, when the shoots had rooted, it was sawed apart and the young trees set out in the orchard or nursery. Another was a way of propagating branches from old trees, which consisted in scraping or peeling the bark from a bearing limb for a little distance, and thickly plastering the wounded surface with earth and cowdung. If this was done in the fall and the branch cut from the tree and planted out in March, it would bear fruit that year. The two foregoing methods may have been new in Gottfried's time, but he also gives an ancient device for rooting trees that do not grow from cuttings, by drawing the tip of a growing shoot through a hole in the bottom of a pot or basket, or a tile, which is filled with earth and attached to the tree or placed close beside it until the shoot has formed a mass of roots within the pot, when it is cut from the tree and the plant set in the ground.

Another old method was in-arching or grafting by approach. Columella gave as example the grafting of the olive on the fig tree, and thought that by this means every kind of cion might be united with every kind of stock. Although primarily a means whereby plants not easily grafted may grow together while on their own roots; or multiplying some that do not root from cuttings by establishing them on alien stocks, Gottfried applied the principle to other ends. He gives the grafting of the grape vine on the cherry tree, by planting it close to the tree, which is bored through at a convenient height and the tip of the vine drawn through the hole, which is then plastered in the usual way at both ends. When the tree has grown about the vine, the latter is cut off below the union, and thenceforth draws its nourishment from the tree. This recipe might naturally have originated as a device for mechanical support in Mediterranean countries, where vines are commonly trained on trees. Again, he applies this method to the production of seedless fruit in the peach and the stone fruits called *marillen* and *kriechen*. The little tree is to be grown for a year close to a young willow, which in March is bored through with an auger, and the tip of the young tree drawn through it, after shaving off its bark where it passes through the hole, which must be well plastered over at both sides. After a year, when the willow has grown about the fruit tree, it is cut off above and the latter below the union, and the tree will thereafter bear fruit without stones. Domitzer omits this recipe, and indeed ignores everything relating to the peach.

Seedlessness was always an objective. Theophrastus tells how to get seedless grapes by splitting the cane lengthwise and scraping out all its pith, then binding it tightly together again. Gottfried merely notes this under the grape, but describes it in detail as a recipe of Martialis for seedless cherries. The young tree is split lengthwise for a span and its pith removed with an iron; then the two parts are tightly bound together and plastered over with dung. After a year this shoot or sapling, which has not yet borne fruit, is cut off and grafted, and its fruit will have no stones. Gottfried remarks that he "believes in this way almost all trees may be relieved of seed trouble." He elsewhere gives a procedure for the pear and apple of bending a cion and inserting both its butt and its tip into the stock; when fully leaved out, the shoot is to be cut in the middle, and the branch grown from its tip will bear seedless fruits, while that from the butt will have the usual seeds or pips. The last two recipes are given by Domitzer, who, however, omits the one for the grape.

We cannot check all Domitzer's contents with Gottfried's *Pelzbuch*, or comment on their many recipes that are interesting for quaintness or absurdity. Both authors pay a good deal of attention to insect and other pests, the remedies and prevention of which involve considerable folklore. Both note "sicknesses" of trees, for which they usually prescribe ancient treatments such as splitting the roots and inserting stones or wedges, and they also very sensibly recommend good dunging and change of soil for many conditions affecting the fruitfulness of trees. With a few exceptions they give no idea of specific diseases. Gottfried notes an ailment of the peach and cherry due to excessive moisture in the tree, which causes *vulheyt* or "swelling," and is to be treated by boring a hole with an auger or scraping off the bark to let the moisture run out, then applying fresh lime; and he also advises sprinkling the tree with plaster to protect it against frost and drought. Both Gottfried and Domitzer describe a disease of the apple and pear, which is said to also afflict other trees. It is called *chrewczen* or *natern* by Gottfried, and Domitzer gives *kreps* or *krebs*, later commonly applied to "canker," as well

as *nater* (serpent or adder). It *chrewcht* or *kreucht* (creeps or crawls) from the trunk to the tip of the tree, and the bark becomes black and dry. The remedy consists in scraping or cutting away the bark clear down to the green wood, then smearing the surface with cow dung.

In comparing Domitzer's contents with Gottfried's, certain omissions seem significant. Domitzer's instructions refer mainly to the apple and pear, though he mentions the hawthorn and medlar in grafting operations and has a few notes on the quince, cherry and plum. He may have omitted data on the peach because that fruit was not grown in his own locality, which may also be true for some of the cherries Gottfried had observed in Mediterranean regions. It is noticeable that Domitzer gives little about the grape, which may indicate that he was unacquainted with Gottfried's *Weinbuch*, which is lacking in many of the Gottfried manuscripts. In my opinion Domitzer contributes nothing whatever, and Gottfried very little, to our knowledge of the varieties of fruits grown in Europe in their times.

Lustgärten und Pflantzungen. Domitzer's statement that he got his information on fruit growing from an industrious man experienced in that trade certainly applies to Gottfried, but the latter did not cover the topics of general culture in the first part of the *Pflantzbüchlein*. Its information on soils, situation, climate and exposure, water requirements, fertilizers, tillage and the like, and the raisings of saplings and care of trees, might have been compiled from the Latin agricultural writers, Cato, Columella, Varro, and others.

Some of this text is closely parallel to that of the *Lustgärten und Pflantzungen mit wunsamer zierd*, first printed by Egenolff in 1530, which has been discussed as one of the complications of the Domitzer bibliography. It consists of material on gardening from many different sources, entirely unclassified, the same topic often being repeated in different extracts scattered through the work. It is more comprehensive than the *Pflantzbüchlein*, and has more data on other branches of gardening than Gottfried's *Pelzbuch*, but it lacks the experimental quality of the latter. Although the *Lustgärten* was obviously printed for German popular use, its allusions to crops and trees of Mediterranean countries show its derivation from the Latin agricultural classics. Its language is literate German of the early sixteenth century, and its text was probably rendered into the vernacular or entirely rewritten by someone who was a scholar rather than an agriculturist.

It is hard to find the original sources of the *Lustgärten*, because the old Roman agriculturists recapitulated so much that was written by their predecessors. The hybrid title: *Pflantzbüchlin der Lustgärten*, of some of its reprints, says it is extracted from Theophrastus, Pliny, Varro, etc. I have not tried to identify much of its text, and suspect the "etcetera" may include Virgil, Columella, and others. The tract certainly does contain matter from Palladius, though probably not quoted directly or fully, and it has a farmer's almanac similar to his, with a few of his maxims. It gives the method of growing peaches without stones by in-arching on a willow stock, very much as it is described by Palladius, who calls it a Spanish trick. Gottfried's description of this procedure must have been taken from an entirely different source.

The *Pflantzbüchlein* is definitely not derived from the *Lustgärten*. It contains many passages in almost identical phraseology; also further text similar in style to parts of the *Lustgärten*. The two booklets evidently have material from a common source, but the contents of the *Pflantzbüchlein* are selected and better arranged, and were probably rewritten, possibly many times, before they were used by Domitzer. Hence it is possible that as an original compilation the *Lustgärten* may be much older than the *Pflantzbüchlein*, although they are printed in practically contemporary German speech. The *Lustgärten* has little in common with Gottfried's *Pelzbuch* except some fantastic recipes, probably of ancient origin. One is usually tempted to guess that data one cannot trace must be found in some unexplored document; hence I suspect many of these recipes came from the *Geoponica*, being handed down in local lore for some time before they were incorporated in Gottfried's instructions. It may be assumed that Gottfried's only connection with the *Lustgärten* is through the ancient agricultural writings that have influenced them both.

There are resemblances to the *Lustgärten* in various contemporary works, most of them probably due to the fact that all of them drew so largely from the same primary sources. I have not made detailed comparisons, but think Lonitzer merely combined its text with that of the *Pflantzbüchlein* for the gardening information in his herbals. If, as seems to me probable, the *Lustgärten* was compiled as a manual of gardening to supplement some medi-

eval materia medica or work on foods, it may not have been widely distributed in manuscript, or served extensively as a source of other works.

The Experienced Gardener of Reichenbach. There are clews to another work that might have supplied text for the *Pflantzbüchlein*. It has not been located, and we do not even know its German title, but it was possibly, though not certainly, contemporary with Domitzer. Camerarius, in his *De re rustica opuscula nonnulla*,[26] lists a work with title so like that of Domitzer that I once guessed it must be another edition of the *Pflantzbüchlein*. He gives: "VVolfgangi Schmacij *de cultura arborum, & inprimis earum insitionibus libellus*. in 8. Noribergae," without date or printer's name. As it is in the same list with "Ioannis Donitzer [sic] pflantzbüchlein," we know that in spite of its Latin title it was in German, and it is also evident that Camerarius had not seen it, but quoted it from another source. However, there was a veritable work by a gardener named Wolfgang Schmatz.

In his *Erneuerter und vermehrter Baum- und Obst-Garten*,[27] Wolfgang Jacob Dümler mentions among his authorities, without citing titles, "*Der wohlerfahrne Reichenbachische gärtner*, Wolffgang Schmatz," and he gives even more specific data in his original *Obsgarten*,[28] published in 1651. This has a list of authors, without titles, from whose works the *Obsgarten* was compiled, including both Johann Domitzer and Wolfgang Schmatz; and on page 52, it cites the former's absurd superstition that trees grafted in February will not have wormy fruit, also the sensible statement of "*Der wolerfahrne* Reichenbachische gärtner, Wolfgang Schmatz," that he pays no attention to the phases of the moon, but begins grafting as soon as the sap rises. I do not find this anywhere in the *Pflantzbüchlein*, though it is in accord with the tenor of some of its instructions. The maxim about preventing worms in fruit by grafting in February is there, of course. It is directly quoted from Gottfried's *Pelzbuch*, where it is one of a group of minor, miscellaneous items; while here it is violently thrust among sane and sober precepts with which it is utterly irrelevant.

There is a geographical factor linking Domitzer with Schmatz. The *Pflantzbüchlein* gives no localities, but according to Pritzel, its first edition was printed by Gabriel Kantz at Zwickau, and it is reasonable to suppose that Domitzer lived in or near there; while if Schmatz lived at Reichenbach in Saxony, that was only a few miles distant. In preparing a manual for his own region, Domitzer might naturally have used a local publication that had been printed by Kantz, or might even have essayed a new edition of a booklet that had gone out of print.

However, it is not certain that the *libellus* of Schmatz was prior to the *Pflantzbüchlein*, which dates back to 1529, and perhaps even earlier. It was cited by Camerarius, together with the 1547 edition of Domitzer, in 1577, but it might then have been comparatively recent, and we have no other indication of its period. Moreover, it may be that it was never published in the author's own neighborhood. Camerarius thought it was a Nuremberg publication, and while I have not found anything corresponding to it, Schmatz's booklet could have been printed there in an ephemeral form which soon afterwards disappeared entirely.

It may be significant that Wolfgang Schmatz of Reichenbach was so well known to the Nurembergers, Dümler and Camerarius. It is conceivable that he practiced his craft in Bavaria, and was known there as a "foreigner," that is, "the gardener from Reichenbach." I venture to guess that fruit culture was already so far advanced and so actively pursued in Bavaria, probably because of Gottfried's earlier teachings, that Schmatz may have been led to visit Nuremberg as a journeyman gardener, or settle there to carry on his trade where his knowledge and skill would be appreciated. His instructions may have been printed at Nuremberg for the benefit of his pupils and followers.

We must admit the possibility that Schmatz's work, like many others, was mainly copied from Gottfried's instructions. According to Camerarius it was a booklet on arboriculture and principally grafting, but the remark quoted by Dümler shows that Schmatz was capable of writing up his personal experience, and probably qualified to choose and edit material on cultivation and propagation from earlier works.

His *libellus* may now be extinct, and there is absolutely no proof that Schmatz was the person from whom Domitzer got much of his information. Nevertheless, the discovery that the latter's methods of propagation were altogether those of Gott-

[26] Camerarius, *De re rustica opuscula nonnulla*, f.52.

[27] W. J. Dümler, *Erneuerter und vermehrter Baum- und Obst-Garten*. (Nürnberg, 1664 pref. 1661), p. 89.

[28] *Ibid.*, *Obsgarten* (Nürnberg, 1651), f.8, verso: "Namen der Authoren. aus welcher Schrifften dieser Obsgarten zusammengelesen werden;" also p. 52.

fried, makes it all the more probable that he got his text on the general care and cultivation of trees ready made from some other individual source. I have no idea whether Domitzer copied parts of the *Pflantzbüchlein* direct from a Gottfried manuscript, or whether they came to him through the work of a previous writer; nor am I sure that Domitzer himself did not compile the directions from old Latin works for the first portion of his booklet, but the latter shows some inconsistencies that, in my opinion, indicate that it was merely rearranged from an earlier text, and sometimes rather bungled.

Although it is dangerous to pick out phrases for special comment, I submit that the maxim about grafting in February to prevent wormy fruit was inserted without any possible reason save the desire to introduce something novel among a series of common-sensible precepts that probably came from old Latin writings. It was taken from Gottfried, and might have been substituted for such an independent idea as that of Schmatz, with which it is utterly at variance. Whether interpolated by Domitzer or a predecessor, it definitely does not belong in its context.

On the other hand, the same introductory section of the *Pflantzbüchlein* contains critical observations which I attribute to some unknown author from whom Domitzer may have taken this text. In a passage closely parallel to the *Lustgärten*, and obviously derived from a Latin writer, it is said that certain trees, like the chestnut, prefer a cool climate, while others need a warm one, as the *pepper tree and the palm tree* [my italics]; "therefore," says the critical compiler, "these are rare with us." And among directions on the choice and preparation of cions is the remark that "some farmers have such superstition that they say that if one turns a shoot *downwards* in cutting or breaking it off, the tree from such a shoot will always be unshapely, and will never grow straight up towards the heavens." This writer had ideas of his own, as Domitzer apparently did not. Gottfried was capable of such common-sense ideas, but there is no text in his *Pelzbuch* to which this can be related. I think they might have come from the "experienced gardener of Reichenbach," who relied on his own judgment rather than on weather and astronomical lore. And although it is a moot question whether Wolfgang Schmatz had anything to do with Domitzer's *Pflantzbüchlein*, the possibility cannot be ignored.

Conclusions. It may be questioned whether the *Pflantzbüchlein* justifies the time and thought that have been given to it; certainly most of the early speculations thrust it into deeper obscurity. As a book, it has little value save as the first German printed work on arboriculture, and its bibliography is important chiefly for its errors and confusions. There is no merit in long lists of editions, but it is an advantage to eliminate some incorrect citations and to locate a few authentic early issues. And the examination of their texts, which are all essentially alike, gives the work a distinct entity.

Its original entity was obscured and soon forgotten, because the work was so largely a copy of the instructions of Gottfried von Franken. Inasmuch as these had become common knowledge among many gardeners, the names of both men were readily lost, while their precepts continued to be widely quoted for a long time. The publication of *Gottfrieds Pelzbuch* by Dr. Eis is not only important on its own account, but also in giving the origin of so many recipes that had previously been vaguely ascribed to some unknown medieval work. The history and distribution of Gottfried's manuscript suggest that Domitzer's work was in a sense a successor to the *Pelzbuch*, when the latter ceased to be copied in manuscript. This is partly borne out by the issue of many editions or imitations of the *Pflantzbüchlein*, and the dialectical variations in early editions, which suggest differences in yet earlier printings or manuscripts. For all practical purposes, the *Pflantzbüchlein* appears to be a transitional, incomplete copy of the *Pelzbuch*, but in the history of gardening literature it obviously has other relations, among which its possible association with Wolfgang Schmatz of Reichenbach is especially interesting.

However absurd some of its maxims appear, the *Pflantzbüchlein* was a tolerably complete manual of fruit culture for its period. The combination of Gottfried's forceful directions with general principles that had been established by the Roman agriculturists, in simple vernacular language, made as good and useful a compend as popular capacity required. It offered a lot of magical tricks and medieval folk lore, but also gave most of the practical knowledge available in the fourteenth century and long afterwards. While its fantastic ideas merely appealed to the imagination, its practical directions were suited to the common gardener, and the large number of issues of Domitzer's booklet indicates a demand for the information it supplied.

NEWS NOTES AND COMMENTS

GENESEE VALLEY

An excellent model for future studies of limited agricultural areas has been provided by Neil A. McNall in his volume entitled *An Agricultural History of the Genesee Valley, 1790–1860* (Philadelphia, University of Pennsylvania Press, 1952, 276 p., $5.00). Publication was made possible by assistance from the Albert J. Beveridge Memorial Fund of the American Historical Association. All of the elements which help to mold the pattern of an agricultural area receive meticulous and adequate attention. Soil, climate, land tenure, transportation, markets, crop practices, and the personnel who farmed in the valley are described and analysed. The end result is a compact volume which separates fact from fiction in tracing the story of the development of one of the more celebrated fertile valleys of the American agricultural scene.

In the opening chapters the policies of the Holland Land company and the sales, tenure, and crop practices of James and William Wadsworth are revealed as dominant forces in establishing the pioneer agricultural pattern of the early years of settlement. Most of the original settlers had their earlier roots in Connecticut, Massachusetts, or Eastern New York, although a considerable number arrived in the Genesee after a half generation or so detour through Vermont. After much of the land in the northern or flat land portion of the Genesee had been cleared, fences erected, and squatterism brought under control, the search for commercial cash crops which would make possible a stable agricultural economy was begun. The settlers first turned to potash, pearlash, whisky, hemp, maple sugar, and merino wool. None of these provided the answer, despite the extensive and persistent exploitation of the possibilities of the Canadian market at Montreal during the first two decades of the 19th century. By 1810 wheat (as flour) had become the cash crop of the community. The Wadsworths recognized this and executed many leasehold agreements with their tenants with terms which called for the payment of from 14 to 24 bushels of wheat per hundred acres as rent. The growing significance of this staple helped Rochester to become a premier milling city, even before the Erie Canal brought shipments of western bulk wheat to its mills. "Genesee Flour" early acquired a reputation for high quality in the New York market.

As the midge took its toll of the wheat crop and as western competition (possibly assisted unfairly by uncontrolled railroad rates) grew in size and quality, the Genesee wheat farmers were forced to search for alternate and supplementary cash crops. Corn, hogs, oats, hay, garden produce, and nursery stock grew in importance. Cattle, sheep and other "live stock" such as mules were bred for export or slaughtering. Dairying, in the form of butter and cheese, became popular in the decade of the 1850's. The challenge of economic change and adaptation was met successfully. Once again it was demonstrated, as in the early period of settlement, that the limestone subsoil of much of this valley provided a remarkable base on which men of vigor and good-will could survive and prosper handsomely. Yet, by 1860, "farming in the Genesee Valley had passed beyond the threshold of a new era." The wheel had come full 'round. The very conditions which had enticed New Englanders and Eastern Yorkers to come to the valley were now operating and beckoning in Michigan, Illinois, and Wisconsin. Younger sons of the plentiful families of the valley found that real agricultural opportunity was no longer open in their home region. Just when they were coming to man's estate, the Genesee agricultural pattern was shifting to larger farms requiring specialized crops with considerable capital for machinery. Thus, off to the West they went, and the Valley settled down to a delightful balance of farms and villages devoted to agriculture and small towns and cities concerned with commerce and industry. This equilibrium has been maintained to a remarkable degree to the present day.

The author is to be congratulated for the scholarship of his investigations and the clarity of his presentation of the step-by-step process in the evolution of a very significant chapter in the history of American agriculture.—*Albert V. House, Harpur College, State University of New York.*

WEST AS SYMBOL AND MYTH

Henry Nash Smith's *Virgin Land: The American West As Symbol And Myth* (Cambridge: Harvard University Press, 1950, 305 p., $4.50) traces myths and symbols of the West, "the vacant continent beyond the frontier," as portrayed in literature and political thought from Benjamin Franklin and Thomas Jefferson through Turner's formulation of the "frontier hypotheses." Mr. Smith states that determination of whether Turner's hypothesis is a valid interpretation of American history is "no part of the intention" of his book. By relating the Turner theory to a group of myths and symbols based in large part on erroneous judgments concerning economic forces and by showing the conflicts between the myths accepted by Turner, the author has written a significant critique of the controversial frontier hypothesis.

Myths and symbols are defined as intellectual constructions which fuse concept and emotion into an image. The author is concerned with those myths and symbols which are collective rather than individual representations.

"Book One: Passage to India" traces the myth of an American empire based on the search for a northwest passage to the fabulous riches of Asia. Thomas Jefferson

is credited with being "the intellectual father of the American advance to the Pacific." Thomas Hart Benton, Asa Whitney, William Gilpin and Walt Whitman are presented as champions of "manifest destiny."

"Book Two: The Sons of Leatherstocking," analyzes the writings of Cooper, Charles W. Webber, Timothy Flint, Edward S. Ellis and others who glamorized the western hunter and trapper. The themes of natural nobility and adventure were limited by rigid ideas of old world class distinctions making it necessary to double the character of the hero or to reveal him as a gentleman in disguise for the development of a romantic plot.

"Book Three: The Garden Of The World" develops the myth of an agrarian utopia with virtuous yeoman farmers, fertile lands, and free homesteads serving as a refuge for city workers. The agrarian utopia was destroyed or aborted, the author states, by the land speculators and the railroad monopolists who served as symbols of the Industrial Revolution.

The concluding chapter of the book relates Turner's frontier theory to the myth of the garden. Mr. Smith concludes: "The capital difficulty of the American agrarian tradition is that it accepted the paired but contradictory ideas of nature and civilization as a general principle of historical and social interpretation. A new intellectual system was requisite before the West could be adequately dealt with in literature or its social development fully understood."—*Gladys L. Baker, U. S. Bureau of Agricultural Economics.*

AMERICAN HISTORY RESEARCH CENTER

The State Historical Society of Wisconsin has recently established the American History Research Center with a program of modest grants-in-aid in support of research, and publication, in "localized" history. Its objective is to encourage both the professional and amateur scholar to explore subjects of national significance with the aid of local materials. It is the Center's hope that more adequate research in the history of smaller social units and geographical regions and their relation to the main stream will be increasingly useful to historians in arriving at their generalizations concerning the nation.

The term "localized" history has been applied to the history of the locality, the local group, and the individual studied in the larger framework of national history, to distinguish it from those studies of local history aimed at answering strictly parochial questions concerning developments within the smaller areas. The Center believes that the knowledge of much in the American experience can be clarified only by identifying the springs of creative activity as they are found scattered throughout this broad land. Reality has diversity; new substantiating detail must be found in order to trace more accurately the panorama of the past and heighten appreciation of its significant developments.

That this sort of an approach is especially appropriate to agricultural history is well recognized. Many of those in the ranks of the Agricultural History Society are unabashedly investigating "local" subjects fully convinced that without such research the national story will remain incomplete and unsatisfactory. It is only summarizing the convictions of these scholars to point out that an authentic synthesis of American agricultural history is apparent only along the lines of national land policy, perhaps occasionally and to a limited degree in party politics, and in the impact of power machinery upon farming. The absence of any general, easily described stream of agricultural development is immediately noted when one attempts to explain the farmers themselves. Farm management has been dependent on biological conditions, geographical, botanical, and physiological differences and therefore inescapably displays a constant variation throughout the country. This is the more so since the farm manager is subject to the influence of various leaders whose perception and force decisively shape the development of different areas, varying the relation of farmers to other social and economic groups. It is impossible to doubt the wisdom of those whose approach to the subject is intelligently localized.

The American History Research Center will welcome proposals for further research along these and similar lines of approach. It is evident that the subject of land policy—federal, state, and local—in its localized application deserves further attention, as do land ownership and land use patterns with their influence on farmers and tenants. Changes in agricultural crops, practices, and techniques, their origins, acceptance, and local impact need additional study. The Center is anxious to have word concerning work in progress, and suggestions on topics and methodology. For further information, address the Chief of the Center, State Historical Society, Madison 6, Wisconsin.—*G. M. Waller, State Historical Society of Wisconsin.*

ILLINOIS CENTRAL ARCHIVES

The Newberry Library has performed a distinct service to the agricultural historian with the publication of the *Guide to the Illinois Central Archives in the Newberry Library, 1851–1906* (Chicago, Newberry Library, 1951, 210 p.). The *Guide*, compiled by Carolyn Curtis Miller, is a catalog of both the papers deposited in the Library and those still remaining in the custody of the company. Each entry is followed by a brief description of the papers in that entry. The volume is indexed and contains, in addition, a chronological index, a list of officials of the company, and a special list of maps. The value of railroad records to the agricultural historian has been amply demonstrated by outstanding works based upon such material; the usability of records is greatly enhanced by such guides as the one at hand.

Dr. Stanley Pargellis advises that copies of this

Guide, as long as the supply lasts, can be obtained upon application to the Newberry Library, Chicago 10, Illinois.

HISTORY OF SCIENCE

The growing recognition of the history of science as a field of study is due in large part to the work of one man, George Sarton. In his latest work, *A Guide to the History of Science* (Waltham, Mass., Chronica Botanica Co., 1952, 316 p., $7.50), Dr. Sarton explains the purpose and meaning of the history of science and then presents a bibliographic summary prepared for the guidance of scholars interested in the history of the natural and exact sciences. The first part, a series of three essays, while making up only a small part of the book, is provocative of thought. For example, the author's discussion of the relationship of the historian of science to the scientist might well be applied to the relationship of the historian of agriculture to the scientist and the economist. The agricultural historian interested in the history of botany, biology, biochemistry, or any of the other natural and exact sciences, or of such sciences as statistics and sociology, will find the bibliographical sections of the book a useful tool.

COTTON IN BRAZIL

The effect of the Civil War upon cotton production in the United States has been commented upon by many agricultural and economic historians. Some of these same historians have noted that cotton growing increased in Brazil as a direct result. The historian now has a carefully documented study of the rise and decline of cotton culture in the province of São Paulo, Brazil during this period to draw upon. Alice Piffer Canabrava, in *O Desenvolvimento da Cultura do Algodão na Provincia de São Paulo (1861–1875)* (São Paulo, 1951, 323 pp.), submitted to the University of São Paulo as a dissertation, traces in detail the beginning of wide-spread cotton growing in São Paulo, shows how it became a major industry within a very few years, and, in tracing its decline, points out why the Brazilian grower could not compete on the world markets with his United States competitor after the Civil War. The author discusses every important factor from the influence of the English cotton manufacturer and the efforts to obtain seed from the United States, Great Britain, and Peru to the attempts to establish cotton mills in the province. The volume is not indexed.

Miss Canabrava draws upon the government records of São Paulo, many of them in manuscript, as the major source of her material. She does not neglect, however, such important sources as travel accounts, reports upon national and international expositions, monographs on cotton culture, and local periodicals. The volume, in the opinion of this reviewer, is an outstanding contribution to agricultural history.—*Wayne D. Rasmussen.*

THE MIDWESTERN COUNTRY TOWN—MYTH AND REALITY

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The appearance of Edgar Lee Masters' *Spoon River Anthology* in 1914 provided midwestern intellectuals with a damning indictment of the spiritual and cultural aridity of the small town from which so many of them had fled.[1] In epitaph after epitaph Masters depicted barren, mean, and vicious lives of villagers, and created for his readers a picture of moral and intellectual depravity softened only occasionally by reference to heroic individuals or humanitarian impulses. As a product of the Lincoln country in Illinois, the very center of America's faith in the village as a producer of men of Lincoln's stature, Masters poured out his rebellion against the cultural standards of the small communities of his own early years. But Masters appealed only to a limited circle of readers. Six years later, in 1920, Sinclair Lewis published his famous novel, *Main Street*, in which he succeeded in reaching a large audience. Almost overnight Gopher Prairie and Carol Kennicott came to symbolize sterile towns and despondent heroines who found it impossible to change village cultural patterns for the better. Didactic and simply written, *Main Street* penetrated the consciousness of even the more intellectually obtuse, and in doing so it joined with *Spoon River* in completing an indictment which now attracted the attention of all classes of Americans.

Earlier realists like Mark Twain, Edward Eggleston and Ed Howe had pointed out the limitations of small-town culture, thus depriving Masters and Lewis of any claim to fatherhood in creating the realistic vogue. *Spoon River* and *Main Street* were timely books in the sense that they marked a peak of disillusionment with small towns. Americans were ready for them and more than willing to examine their claims, even if only to scoff and jeer at their conclusions. For several generations Americans had at least pretended to believe that log cabins surpassed mansions in producing statesmen, that agriculture and country towns constituted the proper environment for creating leaders in the arts and professions, and that pastoral pursuits contributed to virtue, the good life, and happiness. Masters and Lewis challenged all this, and in doing so they served a new age of industry, urbanization and revolution by weakening the credo which had justified agricultural America.

Literary and economic criticism of the country town in many respects have run parallel courses. Both have historical depth and both reached a peak of destructive comment by the 1920's. Writing in 1923, the distinguished American economist, Thorstein Veblen, provided an economic analysis of the country town which was as devastating as the literary efforts of Masters and Lewis. In Veblen's words, "The country town is one of the great American institutions; perhaps the greatest, in the sense that it has had and continues to have a greater part than any other in shaping public sentiment and giving character to American culture."[2] This was true, in Veblen's estimation, because the country town was and is the perfect flower of self-help (rugged individualism) and cupidity. In elaborating this theme, Veblen's incisive language and his gift for irony enabled him to lay bare in a most effective manner the shortcomings of the country town as they appeared to him.

After the 1920's, virulent economic and literary criticism of the country town declined in favor of a more balanced evaluation that attempted to avoid the twin pitfalls of adulation and condemna-

[1] This paper was presented as the presidential address for 1951–52. The term "country town" as used in this paper is defined primarily in terms of service functions to farmers rather than size, although I have attempted to limit my investigations primarily to centers of less than five thousand population. I have defined Mid-West to include Ohio, Indiana, Michigan, Minnesota, Wisconsin, Illinois, Iowa and Missouri, and the eastern farming fringe of Kansas, Nebraska, and the Dakotas. A Fellowship in Midwestern Studies from the Newberry Library, combined with a sabbatical leave from the University of Missouri for the academic year 1951–52, and additional grants from the University of Missouri Research Council over the past several years have provided opportunities to study midwestern country towns.

[2] Thorstein Veblen, "The Country Town," *Freeman*, 7: 417–420 (July 11, 1923) and 440–443 (July 18, 1923). All references to Veblen in this paper are based on this article.

tion. There was need for a moderate approach if writers hoped to avoid the substitution of a new set of myths for the old. Country newspapers, business and professional records, reminiscences, diaries, and autobiographies all bear witness to the complexity and contradictions which have characterized the culture of midwestern country towns. When these are set off against generalizations offered by critics they demonstrate the extent to which interpretation often has departed from reality.

One example involves derogatory generalizations concerning small-town business psychology. As an unfriendly critic, Veblen stated a number of propositions critical of business men in country towns. He accused them of trying to monopolize the farm trade and of exploiting the farmer to the extent that monopoly could be achieved. Needless duplication of overhead and personnel and a virtual monopoly in their own areas led merchants to levy charges at the very peak of what farmers would pay without being driven away. In groceries and banking, where Veblen thought the monopoly was most complete, top price levels often were reached, but seldom in the conduct of ordinary trade. In the latter, the dominant note was "circumspection" or "salesmanlike pusillanimity." This meant that storekeepers attempted to avoid all offense, to cultivate good will without suffering financial loss in so doing, and to exploit a rival merchant's disabilities in every possible way. Veblen also accused storekeepers of being aggressively and truculently conservative. Much prestige value came from contributions to causes which fitted accepted community beliefs, and business men made much of this in their quest for trade. When the chains arrived and began to sell goods on *price* competition, the storekeeper was snared by the competitive philosophy which he had preached over the years. Lastly, in Veblen's opinion, farmers and townsmen cooperated only to boom real-estate values; otherwise relations were marked by hostility.

In stating such clear-cut propositions Veblen failed to distinguish between motivations and the extent to which these were realized. He was also guilty of ignoring the full range of motivations which governed the actions of small-town business men. For these reasons, his analysis, like that of many other unfriendly critics, resulted in an unbalanced picture both of purposes and results as these worked out in country towns.

Newspapers and other records sustain Veblen's charge that small-town business men desired trade monopolies, a not unusual purpose in all occupations, but the same records indicate how far he missed actuality when he postulated a theory of competition under monopolistic conditions. Normally, even in the age of horse-drawn transportation, the farmer had a choice of trading centers. Even the railroads, agencies of long-distance transportation, contributed to this end. As early as 1865, for instance, Lacon, Illinois citizens were invited to visit Putnam's clothing emporium in Chicago, a hundred miles away. According to the advertisement, Putnam's had the largest stock and was the oldest established clothing house in Chicago. Immense retail sales on small margins enabled them to sell a fine suit of clothing at a saving sufficient to cover the round-trip fare from Lacon by railroad.[3] Putnam's advertisement was somewhat unique only in the sense that it attempted to demonstrate economies involved in shopping trips to larger cities.

In the 1860's and 1870's newspapers in country towns carried retail advertising from stores in larger cities some distance away. Lacon, Illinois, thus faced retail competition from Peoria and Chicago; Monroe, Wisconsin, from Janesville, Milwaukee and Chicago; Greencastle, Indiana, from Terre Haute and Indianapolis; Algona, Iowa, from Cedar Falls and Chicago; Chatfield, Minnesota, from Winona and La Crosse; Centreville, Michigan, from Three Rivers and Kalamazoo; Tiffin, Ohio, from Toledo and Zanesville; and Gallatin, Missouri, from St. Joseph. Moreover, storekeepers in towns and hamlets within driving distance advertised their wares. The Gallatin paper carried advertisements from Pattonsburg and Hamilton; the Tiffin, Ohio, paper from Fostoria; the Centreville, Michigan, paper from Burr Oak, Colon and Mendon; the Chatfield, Minnesota, paper from Fillmore, Hamilton and Preston; and the Lacon, Illinois, paper from Washburn, Chillicothe, Lawn Ridge, and La Rose.[4]

[3] *Illinois Gazette*, Jan. 4, 1865.

[4] See issues of Lacon, Illinois, *Illinois Gazette* for 1865 and of *Lacon Home Journal* for 1875; of Monroe, Wisconsin, *Monroe Sentinel* for 1869 and 1876; of Greencastle, Indiana, *Putnam Republican Banner* for 1867 and *Greencastle Banner* for 1874; of Algona, Iowa, *The Upper Des Moines* for 1867 and 1877; of Chatfield, Minnesota, *Chatfield Democrat* for 1867 and 1876; of Centreville, Michigan, *St. Joseph County Republican* for 1869 and 1879; of Tiffin, Ohio, *Tiffin Tribune* for 1868; and of Gallatin, Missouri, *North Missourian* for 1865 and 1873. Almost any issue for the years indicated will reveal advertising of the types specified.

In the light of such evidence, Veblen's analysis of monopolistic practices and policies obviously does not fit the facts. Horse-drawn transportation seriously circumscribed the range of stores which farmers could patronize, but the very duplication of stores and towns, of which Veblen also complained, enabled farmers to select their purchases from at least two or three trading centers. They visited towns in their immediate vicinity for mail and immediate needs at frequent intervals but were inclined to make real trading expeditions to lay in supplies of clothing and major needs once or twice a year. In the interval, they had fingered the merchandise on display in various general stores and had pondered advertisements in the county paper from other villages.

All this is fully documented in farm diaries. Fred Downer kept a record of his activities in Milan township in DeKalb county, Illinois, some three miles from the village of Lee, for the period 1873 to 1891. Over the years the Downers relied on business men in Lee for many services and obtained their mail at the local post office. Occasionally in the dead of winter they had to shovel snow off the road to go even that distance, and they naturally bought a considerable variety of services in Lee under the circumstances. Their Uncle Eb operated one of the stores for a time and they felt at home on the streets of the village. Corn, hogs, chickens, and oats were sold at Lee. In 1887 and 1888 Fred Downer made almost daily trips to the village to deliver milk from the farm. The family bought rubber boots, oysters, firecrackers and groceries from Lee stores and the village offered some social competition to their own township schoolhouse and church.

But Lee exercised no monopoly over their purchases. The father of the family had to go to the county seat at Sycamore to pay taxes and to attend court, and such trips occasionally resulted in purchases from Sycamore merchants. Far more important was the town of Rochelle, where the family bought lamps, a buggy and wagon, washing machines, overcoats costing twenty dollars, and suits at thirty-seven. They relied on Rochelle doctors and dentists to care for their health, and for a time spent the winter months there so the children could attend school. The presence of an aunt at Aurora made that a convenient point for occasional visits to the dentist and for the purchase of a cookstove. Bed springs, mattresses, and a sofa were purchased at Cornton. Visits to larger cities at a distance occurred over the years. "Pa and Ma" attended the Chicago Exposition in 1877 and the diarist himself bought his mother a fifty dollar fur-lined stole circular in the same city on a visit in 1885.[5]

Granger complaints, and those of Veblen himself, that merchants priced their goods on the basis of obtaining all that the traffic would bear have to be considered in the light of this competitive condition. Veblen should have stressed elementary and even outmoded merchandising techniques as more important than monopolistic conditions in maintaining high prices.

Veblen's jibe at storekeepers for the degree to which they accepted and underwrote prevailing social and moral standards in the interests of trade has been supported by popular writers. As one of these put the matter, if a prosperous farmer with six well-married daughters asserted that politics often corrupted honest men, the merchant agreed. But he promptly declared against any criticism of the church, upheld the local schools, and signed petitions favoring local option. Constant debate and discussion around his stove made him familiar with all the nuances of prevailing codes. Of all the listeners to debates on familiar themes, he was least likely to be taken by surprise. When a local disaster revived the favorite subject of the relative destructiveness of fire versus water, he was prepared to hear some contestant rout an adversary with the scornful rejoinder, "You can squanch fire but you can't squanch water."[6] After all, the same debate and the same arguments had been heard in his store after every fire in the town's history. Even the novelists and local colorists have found it difficult to make the merchant anything but a passive character. Milliners, travelling salesmen, town characters, local professional men, even the local grave digger, have all provided more scope for individual interpretation. The storekeeper, the most average man in an average town, was a poor literary hero.

The charge that the business man's character was marked by "salesmanlike pusillanimity" is harder to sustain. Daniel M. Storer was a merchant for forty years, operating for much of the period in

[5] Fred Downer Diaries 1873–1891, Illinois Historical Society Library. Exactly the same pattern is revealed in the John E. Young Diaries 1843–1904, Illinois Historical Society Library, and in Powell Moore, ed., "A Hoosier in Kansas: The Diary of Hiram H. Young, 1865–1895," *Kansas Historical Quarterly*, 14: 166–212 (May 1946); 297–352 (Aug. 1946); 414–446 (Nov. 1946); 15: 42–80 (Feb. 1947); 151–185 (May 1947).

[6] Will Rose, "The Passing of the Country Store," *Scribner's Magazine*, 80: 362–367 (Oct. 1926).

Shakopee, Minnesota. His diary over the years reveals a man who liked and believed in the small-town credo. He was miserable during an interlude of storekeeping in St. Paul, where he moved temporarily in an attempt to better himself financially. In Shakopee, his friends presented him with a goldheaded cane on his twenty-fifth wedding anniversary, and he was so choked with emotion at this gesture that he had to ask a friend to deliver his speech of thanks. When his little granddaughter, Edna, sang at a Methodist festival in the GAR Hall, he confided to his diary that "She done first rate." He played the fife in Decoration Day parades, fiddled for a dance given by the Episcopalians, and was active in the local band. Lodge affairs, funerals, socials, and community festivals provided opportunities for social participation. Farm women who won prizes on canned goods displayed from a booth in front of his store during the local street fair were no prouder over their successes than was he in making them possible. As a small-towner, he was more interested in the names and family connections of the young ladies who came to his store to serve cocoa on Saturday afternoons than he was in the manufacturers who were beginning to use that procedure to popularize their special brands of beverages.[7] The social and intellectual code of Shakopee was as right and natural to him as was food and sleep. "Salesmanlike pusillanimity" scarcely identifies the attitude of a man like Daniel Storer.

In spite of the mutual interdependence of town and countryside, some evidence supports Veblen's charge that hostility prevailed between the two. The Granger movement of the late 1860's and early 1870's was a case in point. Perhaps, however, passive indifference or acceptance of the farmer's patronage as a natural advantage constituted the more usual relationship. Storekeepers in country towns were satisfied to let farmers work out their social life around schools and churches in their own townships. Concentrated organized efforts by business men were likely to go in the direction of seeking new industries so that their villages could ape the tremendous growth in numbers, wealth, and real estate values already taking place in larger American industrial centers. As Ed Howe's famous *Story of a Country Town* put it:

> There was a very general impression that manufactories were needed, and this was talked about so much, and so many inducements were offered, that the people became discouraged, believing that the average manufacturer had a wicked heart and a hollow head to thus wrong Twin Mounds. . . . The people were always miserable by reason of predictions that, unless impossible amounts of money were given to certain enterprises, the town would be ruined, and although they always gave, no sooner was one fund exhausted than it became necessary to raise another. . . . In thinking of the matter since, I have thought that Twin Mounds would have been a much better town but for the fact that it was always expecting improbable disaster, but which never came, for the people were thus prevented from exercising their energy, if they had any.[8]

Aspirations to become city people made the inhabitants of country towns sensitive to the realization that they were almost as rural as the farmers who thronged their streets on Saturday afternoons, and they were inclined to look askance at country ways. The very similarity of culture in countryside and town and the ease with which individuals moved back and forth from one to the other only added to the need for villagers to search for evidence of their superiority. The revolutions in transportation, manufacturing and management which developed in the post-Civil War years created new competitive threats to the domination of farm trade by business men in country towns. Preceding this, they perhaps should have attempted to build a cultural, social, and economic affinity with the countryside to serve as a powerful ally in the trying days ahead. The urge to become industrial centers and indifference to their rural heritage rather than Machiavellian efforts to exploit the farmer constituted the error of small-town business men.

The great volume of literature on the problem of the rural town in the twentieth century has served to create a second debatable assumption in regard to the history of such communities. In reading such studies one is likely to assume that country towns underwent little change and experienced little difficulty before the automobile destroyed their isolation and threatened their very existence. In actuality, the country town received the same constant hammering as the rest of the United States, first from the westward movement and then from the revolutions in transportation, manufacturing and management. The advertising of new agricultural frontiers and of new towns located within these antagonized and frightened owners of property in areas which had passed beyond the frontier

[7] Daniel M. Storer Diary 1849–1905, Minnesota Historical Society.

[8] Ed. W. Howe, *The Story of a Country Town* (New York, 1917), 228–29. The novel was first published in 1882.

stage of development. When James Bryce visited America in the 1880's the town frontier was centered in Dakota and beyond. Bryce quickly caught the spirit of optimism and boom which had characterized the process of town-site speculation from the beginning. He happened to be in Bismarck in 1883 when that young settlement celebrated the laying of the corner stone of its Capitol, intended for the seat of government when the Territory became a state. The Capitol was to be located on the top of a hill a mile away in the brown and dusty prairie. Bryce thought perhaps that Dakotans intended to use the surrounding land for a public park but was informed that it would be needed for future population. The Capitol ultimately was to stand in the center of Bismarck and citizens thought a mile was none too much to allow for expansion.[9] This Capitol burned in 1930, and when rebuilt as a nineteen-story skyscraper, it was placed nearer to the city. Realism had arrived at last.

Older midwestern towns lost population to such bumptious upstarts and found it necessary to carry on a campaign of glorification of local advantages in order to lessen migration. Algona, Iowa, was founded in 1854, late enough, seemingly, to escape most of the impact of competition from new agricultural frontiers, since the frontier supposedly was gone by the 1890's. From the very first Algona had to compete with the attractions of other frontier towns, and as late as 1908 citizens in the immediate trade area were being wooed by advertisements of the Pacific Coast extension of the Chicago, Milwaukee and St. Paul Railroad. In these, the Company offered to send eight free pamphlets describing lands in the Dakotas, Montana, Idaho and Washington, one of which concerned government homesteads and how to obtain them. The railroad was running Homeseekers' Excursions at special low fares for those interested in success and independence.[10]

Competition from a plethora of frontier towns was only the beginning for these supposedly sleepy midwestern communities. Attention has been called to the industrial craze which swept over American urban communities and which has not yet subsided. Midwestern country towns staged feverish campaigns to raise money to subsidize the establishment of local shoe factories or to obtain some new form of transportation. Some succeeded, many had to settle for axe-handle factories, and others were denied even that solace. Whatever the outcome, such campaigns stimulated dissatisfaction with existing conditions and a determination to bring about a change.

The basic skirmishing for what became a twentieth century "battle of the brands" developed in the 1860's and 1870's in promotional efforts involving durable goods like pianos, farm machinery, and most of all, sewing machines. Brand names were common in all these fields, and manufacturers went over the heads of local retailers in offering to send goods on approval, in seeking local agents for their sale, and in offering to establish agencies in stores already in operation. A growing volume of such advertising began to close in on country storekeepers and in the end made them primarily distributors for national brands at recognized prices. Here again constant change was the order of the day, although merchants accepted this trend much more gracefully than they acceded to other shifts in local economy.

Decade by decade the revolutions in transportation, manufacturing and management modified the economic life of midwestern country towns. The electric trolley car, rural free delivery, mail-order houses, the telephone, chain stores, the automobile and truck all contributed to shifting patterns of operation and helped to determine the degree of prosperity which prevailed in any particular town. Some profited by the changes being wrought in economic life and others suffered, but all felt the impact of constant change.

Lack of recognition of this long-continuing pattern of change in midwestern country towns has contributed to a third common opinion which partakes of myth more than reality, namely, that the country town is a dying institution. The growth of metropolitan centers and the ease of reaching these by automobile, truck and bus has seriously injured and even destroyed many country towns. Vacant buildings along Main Street offer compelling evidence of the changes under way and apparently provide irrefutable proof that the country town is rapidly disappearing from the American scene.

Viewed historically, however, the picture takes on new meaning. Vacant buildings and declining population in a considerable percentage of towns seems to have been characteristic of midwestern history for almost every decade from the beginning of settlement. County histories testify to the num-

[9] James Bryce, *The American Commonwealth* (New York, 1891), 2: 703.

[10] Algona, Iowa, *The Upper Des Moines*, Apr. 15, 1908.

ber of ghost towns which fell prey to destructive forces or were still-born long before the automobile. In 1930, for instance, Iowa, which became a state only in 1846, had 2,205 completely abandoned towns, villages, hamlets and country post offices.[11] Reasons for this high mortality in less than a hundred years were legion. Loss of the county seat to a larger or more aggressive town; abandonment of a military road; exhaustion of coal veins; declining importance of grist and sawmills; declining importance of river traffic; shifts in locational advantages with the coming of railroads—all these and other factors contributed to a heavy mortality before the automobile age. In this earlier period, however, few people expressed any fear concerning the future of the midwestern country town.

TABLE 1. *Number of People Living in Towns in Eight Midwestern States, 1903 and 1952*

Size of Town	*Population* 1903	1952
99 or less	345,376	254,067
100–499	1,053,979	1,210,118
500–999	728,921	857,357
1,000–1,999	819,626	1,012,882
2,000–2,999	486,665	648,302
3,000–3,999	326,715	406,183
4,000–4,999	280,411	366,558
5,000–9,999	875,627	1,404,772
Over 10,000	1,112,855	3,584,768

After the turn of the century this attitude was replaced by growing alarm over the decline of rural communities and country towns. The past half century has seen literally a flood of articles on how to save Main Street, most of which seem to have assumed that the rural village was rapidly disappearing. This state of mind undoubtedly stimulated efforts to find out exactly what was happening to country towns. In the 1920's, the Institute of Social and Religious Research carried through an intensive field investigation of 140 villages of between 250 and 2,500 population, 60 of which were located in the Middle West. On the basis of this data, an analysis of census figures, and supplementary estimates from the Rand McNally Atlases where the census was incomplete, the Institute pointed out that the agricultural village was not disappearing from the American scene.[12] Edmund Brunner, who played a prominent part in the investigations of the Institute, joined with J. H. Kolb in writing the book *Rural Social Trends* which appeared in 1933 as a volume in the famous Hoover series on recent social trends. In this the authors confirmed the earlier conclusions of the Institute after examining all available data:

> An examination of the evidence for the 8,900 villages of all types and also for the sample of agricultural villages, therefore gives no support to the theory that the American Villages as a class are a disappearing or a declining population type. That is not to say that some villages with their communities do not decline or even disappear. But the evidence indicates that hundreds of villages grow and that thousands hold their own in the general growth of the total population.[13]

Data collected by a graduate student at the University of Missouri confirms the general picture presented for the period to 1930 and indicates what has happened since then. Midwestern country towns of less than five thousand population have declined from 18 per cent of the total midwestern population in 1903 to 16 per cent in 1932 and to 10 per cent in 1952. Country towns thus have declined if the word is defined in terms of percentage of population residing in them. On the other hand, the number of people living in country towns in 1952 is actually greater than in 1903 in all size groups with more than 100 population. The figures appear in Table 1.[14] In view of the de-

[11] David C. Mott, "Abandoned Towns, Villages and Post Offices of Iowa," *Annals of Iowa*, 17: 434–465 (Oct. 1930); 513–543 (Jan. 1931); 578–599 (Apr. 1931); 18: 42–69 (July 1931); 189–220 (Jan. 1932).

[12] See, for example, E. Brunner, G. S. Hughes, and M. Patten, *American Agricultural Villages* (New York, 1927) for various indices of measurement. The Institute found that census data were inadequate to measure population trends in country towns. The figure used to divide urban and rural population has been shifted from decade to decade. Unincorporated communities are ignored. Hence, the Institute used estimates from the Rand McNally Atlases as a basis for data apart from the villages where field workers made actual counts of population. The Institute found that the Rand McNally Atlases checked out fairly close to the figures which the Institute collected itself, and was inclined to feel that Atlas figures were reasonably correct.

[13] Edmund Brunner and J. H. Kolb, *Rural Social Trends* (New York, 1933), 85.

[14] These data were collected by Joseph LaPage under my supervision. The eight states examined were those listed in footnote one. Since small towns within metropolitan areas have been shown to grow or survive at a different rate than those in non-metropolitan areas, we first made a list of all counties included in "standard metropolitan areas" as defined by the 1950 census. These were eliminated from all consideration. Then,

clining farm population in the Mid-West, it is evident that the country town has displayed an astonishing capacity to survive. Moreover, the figures definitely indicate the mythical nature of the assertion that the midwestern country town is a dying institution.

Lastly, the charge that such communities have been and are barren and sterile culturally and intellectually needs reappraisal in terms of surviving historical records. Space permits attention to only one class of these, the autobiographies of people born in midwestern country towns who went on to achieve prominence in the arts or professions. On the basis of such records it is thoroughly evident that country towns were not creative centers. They were addicted to the cult of the immediately useful and the practical. Financial success in an artistic career brought recognition from the masculine inhabitants of Main Street but artistic matters were left primarily to the womenfolk, who insisted that art must first of all be moral. Professional men like the fathers of William Allen White, Edgar Lee Masters, and Thomas Hart Benton, the Missouri artist, strongly opposed the inclinations of their sons to turn to artistic careers. White's parents, for instance, wanted their only son to have every advantage. On his tenth birthday they presented him with an expensive Mason and Hamlin cabinet organ and gladly provided additional sums for music lessons. When he participated in impromptu local musical affairs or brought home two or three dollars earned by calling and fiddling at country dances, they felt rewarded for providing him with an amusing and popular social accomplishment. But when he began to practice seriously enough to indicate that he might be contemplating a musical career, that was a different matter. His father pointed out to him the example of a local "whiskey-soaked failure" who gave fiddling lessons and played for dances, and urged his son to turn to a more suitable occupation.[15]

On the other hand, lawyers, doctors, newspaper editors, preachers and teachers found employment and encouragement in the country town. Moreover, citizens of such communities were eager to aid promising youngsters. A lawyer in Osage, Iowa, offered to take Hamlin Garland into his law office,[16] from where he could have moved on to his literary career had he not chosen another avenue. Sherwood Anderson as a boy was given a key so that he could make use of the high-school principal's private library whenever he wished.[17] Difficult and bilious as he was, Edgar Lee Masters received encouragement and challenge from teachers, doctors, preachers, and lawyers in the small Illinois towns where he spent his youth. Some of them achieved a measure of intellectual distinction of their own, and all seem to have been anxious to foster talent in others.[18] Herbert Quick, Iowa novelist, was a farm boy who passed through the stages of teaching rural school, a principalship of village grade schools, the reading of law, and on to a profitable legal practice. In his autobiography, published in 1925 at the height of the debunking crusade, he commented:

> There is a school of writers much in print, and some of them in vogue recently, who have set themselves to the analysis and description of country, village and town communities, with the purpose in mind of displaying to the world their—the localities', not the writers'—sordid drabness, their utter poverty of inspiration, their lack of men and women above the plane of two-legged horses and cattle.
>
> There are too many such in all human societies; but I have spent a good deal of my life in such communities, and I have never failed from time to time and at important crises in my life to make contact with the

with an adding machine, we totalled the population for each of the size ranges as indicated in the table above for the years 1903, 1932 and 1952 on the basis of the estimated or census-provided figures appearing in the Rand McNally Commercial Atlases for the three years specified. All towns were thus included. Percentages of decline on the basis of total population came from dividing our totals for all towns below 5,000 by the total population of the eight states, obtained from the official census figures. The "Over 10,000" category in the table above involves cities of 10,000 to 49,999, since the 1950 census puts centers of 50,000 and over under the heading of a "standard metropolitan area," which of course included also surrounding counties closely integrated with the center. Population in towns below 3,000 in size has tended to decline slightly between 1932 and 1952, but all except those below 100 in size are still above the 1903 figure. Variations within each size group among the eight states and effects of depressed economic conditions after 1929, all emphasize the point of *change* in the population history of country towns.

[15] William Allen White, *Autobiography* (New York, 1946), 58–59. See, also, Thomas Hart Benton, *An Artist in America* (New York, 1937), 12, and Edgar Lee Masters, *Across Spoon River. An Autobiography* (New York, 1936), 99.

[16] Hamlin Garland, *A Son of the Middle Border* (New York, 1920), chapter 18.

[17] *Sherwood Anderson's Memoirs* (New York, 1942), 58–59.

[18] Masters, *Across Spoon River, passim.*

souls who led me outward and upward. One of our geniuses in gloom, if any such has read this history so far, will be sure that there was no source of light for me in those days. But they are looking for darkness. I, without knowing it, was looking for light. Now the one search is as one-sided as the other; and when it comes to the artist's task, brings forth work just as faulty.[19]

Although evidence of this type does not eliminate the charge of cultural poverty, it indicates the fallacious nature of sweeping generalizations on that theme. The nostalgic effusions of a Zona Gale are as wrong on the one hand as are the fulminations of a Sinclair Lewis on the other. While his heroine, Carol Kennicott, supposedly represented the depressing effects of Main Street on the artistic spirit, she easily could have been used by another novelist to depict frustrations resulting from a lack of ability but blamed on environmental surroundings. Too many creative intellects were awakened in small-town Mid-America for one to conclude that Main Street destroyed creative impulses. Nor should one necessarily condemn the small town because its distinguished sons often sought training and companionship in cultural islands in larger cities. Preparation in the arts and professions has generally demanded more even in the way of material resources than the country town has been able to provide.

For generalizations to have validity they need to be based on a multiplicity of records and data that encompasses, and at the same time transcends, purely personal experiences. Only through such an approach can one hope to separate myth and reality as they relate to the midwestern country town.

[19] Herbert Quick, *One Man's Life* (Indianapolis, 1925), 164.

VIRGINIA AGRICULTURAL REFORM, 1815–1860

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That Washington, Jefferson, Madison, and Henry helped Virginia to reach a sort of political zenith at the beginning of her Statehood, all would agree I am sure.[1] Some of these men were "giants in the earth" in another field, that of agriculture—the basic economy of any political State. By the time of the Revolution, certain of the farmers of the Tidewater realized that soil exhaustion was resulting from the so-called "skim the cream" policies. Numbers resorted to the Piedmont and beyond for new lands to exhaust; others began to employ methods suggested by European reformers and a few colonial pioneers. Angus McDonald, formerly of the United States Department of Agriculture, has described some of them in his booklet *Early American Soil Conservationists*.[2] One, John Taylor, realized the significance of certain of his neighbor's efforts along the line of soil conservation and praised them in his paper *The Arator* by saying "When the future historian of our republic shall search for acts of patriotism, and matter for biography, the contrast between the heroes (wise farmers) who created, and the politicians who have ruined a nation will afford him ample room for exhausting the strongest phrases of eulogy and censure."[3]

These early conservationists proved too few in number, and farm after farm suffered from erosion. It remained for the following generations to expand the efforts the colonists had made, namely, to coordinate the methods of soil conservation and the initiative of the farmers into a national program for preserving the soil. Actually, as late as 1815, there was little crop rotation, and the ruinous tobacco culture was leaching the soil. The scarcity of capital and the institution of slavery helped to promote the system. U. B. Phillips states it this way "the Piedmont in Virginia and the Carolinas had also reached a stage of some exhaustion and depopulation. The great liability of the hillsides to the washing away of their soil made the preservation of fertility peculiarly difficult in this rolling country,

[1] This article was presented before the Southern Historical Association, Atlanta, Georgia, Nov. 9, 1950.

[2] Angus McDonald, *Early American Soil Conservationists* (U. S. Department of Agriculture, *Misc. Pub. 449*).

[3] John Taylor, *Arator*, 1818, p. 291.

while the plantation system as generally administered was notorious for its carelessness of tillage."[4]

The organization of agricultural societies and farmers' clubs, together with the publishing of farm journals, the holding of fairs, and the creation of a general "climate of opinion" in favor of reform were the results of efforts on the part of Virginians to solve the agricultural dilemma. The outcome brought an agricultural revival in the 1830–1860 period with scientific farming practiced, greater production, more diversified agriculture, and improved land values. With those efforts and results this article is concerned.

The Albemarle Agricultural Society, formed in 1817, at Charlottesville, was the first local society. Among its organizers were Jefferson, Madison, several Virginia governors, senators, judges, and others, making up delegates from five counties. The rolls soon included John S. Skinner of Baltimore, pioneer fertilizer importer and publisher of the *American Farmer*, and Joseph Correa de Serra, Minister of Portugal and Brazil, as honorary members. Of this group Rodney H. True said "the weight of influence behind this new organization was unsurpassed in the annals of Virginia."[5] Their aims included the study and practice of crop rotation, proper care of stock and machinery, proper use of manures, and the like. At subsequent meetings papers were presented on topics entitled "The Hessian Fly," "The Cultivation of Corn," "The Care of Machinery," and many others. Most of these were published in the newspapers and journals of that time. The society sponsored the sending out of questionnaires to check on agricultural practice in the area, the establishing of a plant nursery and a plow factory, the holding of fairs, and securing for the use of the membership a blooded horse from Spain. Their fairs were held regularly until 1849 and were well attended. After this date, many of the members had joined a newer and more efficient organization, the Albemarle Hole and Corner Club.[6]

The new clubs were very popular in the 1850's; limited to 12 members, they met monthly on the farm of one of the members to check on his farm practices. Each member was responsible for entertainment of the group, and each member was expected to undertake a project yearly.[7] In 1849, for example, T. J. Randolph held one of these meetings on his Albemarle plantation, and the report of the meeting held there declared his crops of corn and wheat good, while the slave quarters were crude and ill kept.[8] Meetings like this gave the farmer a chance to do his best and, at the same time, to sell his ideas to the farmers in the club.

The Fredericksburg Agricultural Society started in 1818 with an outstanding agriculturalist, James M. Garnett, as president. Garnett served in this office for twenty years, and his addresses before the society not only urged soil reform but made special pleas for tariff reduction and for internal improvements. Other prominent members of this society included John Taliaferro, W. F. Gray, and Robert Semple. The society declared that "agriculture should avail herself of this improvement to keep pace with the progress of society; and to make such regulations as may favor the general communication of knowledge and the acquisition of improvements from abroad, in the vegetable and animal kingdom."[9]

In southside Virginia, at Clarksville in 1820, the Roanoke Agricultural Society was set up in order to promote the interests and improvements of agricultural husbandry and rural economy. The membership decided to study in quarterly meetings such topics as the tariff, the best method to cultivate soil, the proper way to feed stock, and the best manures.[10]

Other societies of the first two decades were organized in Williamsburg, Fincastle, Rockbridge, Winchester, Jetersville, and Ayletts. Taking the Rockbridge Society as an example, it was formed with Robert H. Barton as president and John P. Caruthers as secretary. Discussions were held on agricultural education, crop rotation, and the proper use of lime. County fairs were held yearly to show the improvements at the time.[11]

More organizations were formed in the 40s and

[4] L. B. Schmidt and E. D. Ross, eds., *Readings in the Economic History of American Agriculture* (New York, 1925), 272.

[5] *American Farmer*, 2: 255; R. H. True, "Early Days of the Albemarle Agricultural Society," American Historical Association, *Annual Report*, 1918, 1: 243–255.

[6] *Southern Planter*, 2: 153.

[7] *Ibid.*, 3: 109.

[8] *Farmers Register*, 2: 565–569, 4: 539–544; *American Farmer*, 5: 371, 11: 314; *Southern Planter*, 8: 241; *Richmond Enquirer*, Jan. 5, 1820.

[9] *American Farmer*, 2: 255.

[10] *Ibid.*, 8: 347.

[11] *Ibid.*, 3: 379; *Herald of the Valley* (Fincastle), Nov. 22, 1822; *Farmers Register*, 1–2: 181–182, 297–299, 317, 383, 416.

50s with those located in Henrico, Port Royal, Tappahannock, King William, Orange, Hanover, and Prince George. Again, to take typical examples, may we select the Henrico and Orange Agricultural Societies. The former was created in 1845 with a General W. H. Richardson, who would serve later as an agricultural commissioner for the State society, as one of the leading members. The Henrico Society, besides holding fairs, was one of the chief supporters of a State organization and petitioned the legislature again and again for aid to agriculture.[12] The Orange Union Society, lasting from 1842 to 1848, stated its aims this way:

> The farmers of Orange and the adjacent counties appreciate the importance of an improved system of husbandry in a national as well as individual point of view. Sensible of their own deficiency of knowledge in the theory and practice of rural economy and of the receptivity of united and concentrated efforts on the part of those deeply interested in the advancement of agriculture to remove existing errors and to introduce correct practices; and believing that agricultural associations have been found highly beneficial in other states and counties by exciting a zealous spirit of engineering and improvement, having determined to associate themselves together and constitute an agricultural society and for the government and good order of the institution, they adopt the following rules and regulations.[13]

Princess Ann and Mecklenberg organized Corner and Hole Societies instead. The benefits were spoken of in this fashion: it called forth the old Virginia sociability, had excited his energies and produced a spirit of inquiry and devotion which must lead to improvements in social habits and farm conditions.[14] These clubs still maintained the 12 members who were required to participate regularly in some experiment for the year's investigation.

At the same time, there were societies in what is now West Virginia. The Berkeley Agricultural Society formed in 1845 included representatives from Jefferson, Clarke, and Frederick counties. Their studies included analysis of their soil, deep plowing, and the raising of grain crops. Not unmindful of the political differences of the hour, they went on record as favoring separation from eastern Virginia.[15]

Other societies and clubs were formed in Charles City, Loudoun, and Gloucester counties, and regional organizations were formed in the Tidewater and southside areas. Some Virginia farmers had joined agricultural societies outside of the State, as the Philadelphia Society for Promoting Agriculture. In fact, the *American Farmer* in 1859 stated that Virginia had shown more interest in forming such organizations than any other State.[16]

The interest in these societies varied during the period. Starting with a burst in the early 20s, tapering off in the late 20s and early 30s, rising in the 40s and returning in an amazing crescendo in the 50s. Certain criticisms were made from time to time. One person declared that:

> the agricultural societies hold the power of doing increased good, and as the gentlemen who have the direction of the funds of these societies have no private views to answer, but are laboring in the most disinterested manner, solely for the public good, we know them too well to fear giving offense by any suggestions, which have no other object than the public good and which will not be submitted without a perfect respect for their public spirit and superior judgment.[17]

Some of the usual defects pointed out were that (1) the initial zeal was too often allowed to die; (2) the working membership was too small; (3) legislative support for an agricultural department, for the holding of agricultural surveys and the establishing of a professorship of agriculture in one of the Virginia colleges was lacking; and (4) a strong State society was needed.[18] In spite of these objections, organized effort appeared the only hope by which Virginia might obtain an improved rural economy.

The efforts made to form a State society were many. An interest was expressed in such as early as 1811 when a call was sent out to hold a meeting of those so mindful. Soon afterward the Virginia Society for Promoting Agriculture was formed.

[12] *Southern Planter*, 1–2: 2, 114, 5: 278–279; *Farmers Register*, 10: 201, 237; *Richmond Enquirer*, Sept. 18, 1845, Nov. 7, 1847.

[13] Orange Union Agricultural Society Account Book, deposited in Alderman Library, University of Virginia, Charlottesville.

[14] *Southern Planter*, 2: 243, 6: 141.

[15] *American Farmer*, 5: 93, 178, 11: 371, 14: 49; *Plow, Anvil and Loom*, 7: 168.

[16] *Southern Planter*, 12: 172–173, 13: 173, 301, 14: 147–149; *American Farmer*, 6: 126, 332, 7: 61; Philadelphia Society for Promoting Agriculture, *Memoirs*, v. 1–5, 1808–1825; *Richmond Enquirer*, Oct. 29, 1828.

[17] *Farmers Register*, 6: 521.

[18] *Ibid.*, 1: 200–201.

The membership of 220 included such worthies as John Taylor, Wilson C. Nicholas, Littleton Tazewell, William H. Cabell, John Marshall, John Wickham, and Captain William Danridge. The meetings were held at Richmond, and the purpose, as stated in the constitution, declared:

> Our woods have disappeared and are succeeded too generally by exhausted fields and gullied hills. The land of our ancestors which nourished our infancy, and contains the bodies of our fathers must be improved or abandoned. That necessity which originally impelled us to cut down, now impells us with a force not less urgent to restore the fertility of which our soil has been deprived.[19]

At their meetings papers were heard on such topics as "hemp growing," the "use of fertilizer," the "proper cultivation of corn," and "farming." James M. Garnett urged the society to sponsor agricultural tours, mainly for the purpose of surveying methods of agriculture. These would be like Arthur Young's tours of Europe. Those for Virginia were not held until the 1850s when the society paid General Richardson and Edmund Ruffin to make surveys. In the 1820s the society was reorganized after a meeting at Parkers Tavern in Surry County and renamed the United Agricultural Society of Virginia. Edmund Ruffin, the great marl advocate and editor of the *Farmers Register*, was made secretary. Two new aims of the organization were to act as a clearinghouse for all local societies and to pen memorials to Congress in opposition to the tariff. Annual meetings were held, and delegates from the local societies were accorded membership. At the first meeting, a memorial was penned requesting Congress to place the upper limit of the tariff at 25 percent. According to Ruffin, to continue raising the tariff would only provide manufacturing with fictitious capital and encourage wild speculation; finally, it would reduce our overseas trade and isolate us from other members of the human family.[20] The society declined in membership in the late 1820s and was reorganized, to be known as the Virginia Central Society, in the next decade. It held fairs and appointed delegates to attend the organization of the National Agricultural Society in Washington, D. C.[21] The advantages accruing to Virginia were that, in addition to being a clearinghouse for the county societies and encouraging improved production through the fairs, the State society brought together farmers from the whole State and thus helped to prevent sectionalism.[22] Again, interest in the State society waned and in 1848, during the time of a meeting of the General Assembly, a group of old members got together seeking a way to stir new interest in the State group. Former President Tyler presided and a memorial was drawn up asking for a charter from the General Assembly.[23] This charter was granted and in March 1853, delegates from Albemarle, Louisa, Westmoreland, and Rockingham counties met in the Capital to organize. Edmund Ruffin, first president, selected a committee to draw up a constitution and plan the first fair. Pledges were asked from a number of the new members of $100 each. A few gave as much as $1,000 for its support. Some 68 societies in the State were urged to make regular contributions.[24] General W. H. Richardson was appointed commissioner to comb the State for members and contributions. In two years time the membership climbed to 2,000 with an endowment of $42,109. In 1856, these figures had increased to 10,103 and $82,071 respectively.[25] The constitution as finally drawn up provided for the usual officers, an annual fair, and the holding of an annual meeting, which would be called the Farmers' Assembly, at the same time as the fair.[26] In 1854, St. George Cocke of Bremo Plantation was elected president, and in urging support for the society he said: "Our agriculturalists alone seem stationary in the midst of this unusual and splendid progress. But they, too, are beginning to catch the spirit of the age, and to the discerning eye, a brilliant future begins to dawn in life and light, I hope, over the whole field of agriculture, science and art."[27] Cocke was reelected yearly president of the society until 1857

[19] Society of Virginia for Promoting Agriculture, *Memoirs*, 1818, deposited in Virginia State Library, Richmond.

[20] *William and Mary Quarterly*, 26: 169–170; Addresses of the Virginia Agricultural Society, found in Virginia State Library; *American Farmer*, 5: 339, 347; *Richmond Enquirer*, May 28, 1819, Jan. 29, 1820.

[21] *American Farmer*, 13: 395; *Virginia Advocate* (Charlottesville), Nov. 11, 1836.

[22] *Southern Planter*, 9–10: 346–347.

[23] *Richmond Daily Whig*, Jan. 8, 1847.

[24] *Southern Farmer*, 13–14: 111; 20: 43–47; *American Farmer*, 8: 338; *Plow, Anvil and Loom*, 5: 11; *Richmond Whig*, Feb. 20, 1852.

[25] *Southern Farmer*, 16–17: 186–188; *American Farmer*, 12: 12.

[26] Virginia State Agricultural Society, Constitution, found in the Virginia State Library.

[27] *Richmond Whig*, Mar. 29, 1853.

and was exceedingly generous in his gifts to the society. In his address before the Farmers' Assembly in 1856, he compared the State society to the Royal Agricultural Society of London and concluded with a plea for a sympathetic General Assembly that would provide an agricultural department and an agricultural professor at the University of Virginia.[28] The State society had two rival organizations in the 50s that threatened to take a part of its membership and to hold the State fairs in their areas. The two societies were the Central Agricultural at Petersburg and the Virginia-North Carolina Society. The State society and the Petersburg organization tried a union fair for several years which turned out fairly well in spite of the rivalry.[29]

The activities of these clubs and societies varied. The regular meetings were helpful and stimulating to the individual members, whether they listened to papers delivered before the Albemarle Society by James Barbour on the "Cultivation of Wheat" or by Peter Minor on "Proper Drainage" or even to Dr. Alfred Leyburn's paper on "Clover" given before the Rockbridge Agricultural Society. Question periods were held, giving time for further elaboration of the subject and afterwards those unable to be present might read them in the *Farmers Register*, the *Richmond Enquirer*, or some other medium.[30] Other types of reports were given at the meetings, such as Edmund Ruffin's survey of agricultural conditions in the State, made for the State society, in 1854, or again, the results of Professor W. B. Roger's soil analysis. Recommendations were made necessitating the society's action in the case of the tariff issue, State sponsorship of agricultural education, or the preparing of a questionnaire to discover the wisest system of cultivation to use. A case in point, as to the questionnaire, came when John H. Cocke of the Albemarle Agricultural Society advocated the six-field system and wanted the organization to send out questionnaires throughout the State to see what system was in use generally.[31] No one spoke louder for reforms than James M. Garnett of the Fredericksburg Agricultural Society, who, after serving as president for twenty years, stated in his valedictory that the General Assembly had remained blind to agricultural needs of the State. In fact, it was blind to everything but politics:

> for many years past, sessions have been spent in profitless discussion of mere political abstractions, or in disgraceful quarrels—and now, my brethren, one and all, I must bid you farewell, perhaps—and not improbably for the last time. Should it be so, listen, I pray you, to my parting entreaty, cherish our Society; keep it up;—let the faithful friends of our cause constantly bear in mind the all important fact; that there is no other way yet devised so well calculated to promote the husbandry of this or any country, as that of organizing and maintaining in the proper spirit, societies of agriculture.[32]

Garnett was an ardent promoter of agricultural organizations and had served as first president of the United States Argicultural Society.[33]

Actual experiments were described and demonstrated. For example, Edwin G. Booth's demonstration of the best types of farm machinery to use, when he displayed plows, drills, and reapers before the State society at Richmond in 1853 was reminiscent of a demonstration in some modern physics lecture room. He preferred Hussey's reaper to that of McCormick's, which make he called a humbug.[34] The Corner and Hole Clubs were the "doers of the word," however, for each member was responsible for exhibiting his experiment on his farm yearly. Not only was the experiment exhibited but the whole effort of the farm was closely observed. It is best told in the words of the secretary of the Prince George Club:

> We meet once a month regularly as we have twelve members, each farm is visited annually, upon such occasions the farm is minutely inspected. Fences, stables, farm implements, stock, plowing, sowing and reaping all pass under review. Afterwards, the club returns to the dwelling and the president appoints two members to read a report on all they saw. . . .[35]

From these gatherings new ideas were gotten and general action taken on issues of the day, not to mention the social benefits derived.

[28] Annual Report of the President and Executive Committee to the Farmers Assembly of the Virginia State Agricultural Society, 1857, deposited in Virginia State Library.

[29] *American Farmer*, 10: 81; *Southern Planter*, 18: 320–321, 19:514, 530.

[30] *American Farmer*, 1: 295–350; *Richmond Enquirer*, July 2, 1819.

[31] *American Farmer*, 3: 313–317; *Farmers Register*, 5: 129; *Plow, Anvil and Loom*, 1: 247.

[32] *Farmers Register*, 7: 3.

[33] A. O. Craven, "The Agricultural Reformers of the Ante-Bellum South," *American Historical Review*, 33: 302–314 (January 1928).

[34] Virginia State Agricultural Society, Journal of the Transactions, 1853, p. 50.

[35] *Southern Planter*, 13: 173.

These organizations aimed to influence legislation for the farmer's benefit. Memorials to the General Assembly asked for internal improvements, the setting up of an agricultural department, the establishment of an agricultural professorship or college, the sponsoring of soil surveys, and the granting of financial aid for the State society. First, let us consider the agitation for agricultural education. A personage no less than James Madison favored the setting up of an agricultural school in the State in an address before the Albemarle Agricultural Society in the 20s. At the same time, another member felt the State should appropriate $10,000 for the establishing of several model farms for experimentation.[36] After a number of societies had favored measures of this nature, an agricultural convention was called to meet at the Capital on January 13, 1836. The largest delegation arrived from the Albemarle and Fredericksburg societies. After James Barbour was appointed chairman, a memorial was drawn up asking the State for the establishing of an agricultural professorship, a model farm, and a department of agriculture—really a big order for one memorial. The memorial, after calling attention to the need to do something to keep the populace from moving west, stated that:

> the legislature, in the early days of the Commonwealth, seemed never to have deemed it any part of their duty to go much beyond matters of mere local legislation. Hence, the pernicious hallucination still to be found among us, that they really have no power to do more; as if to promote the general welfare of Virginia by popular education and internal improvements were not quite as much a matter of legislative duty as taking care of oysters in the water of the Chesapeake, prohibiting fish traps in navigable streams, and preventing hogs from running at large in petty villages and towns.[37]

They went on to specify that the professors should receive a salary of $1,500 annually and that the board of agriculture should be composed of a member from each of the congressional districts. The memorial was tabled, and not until 1839 was a bill presented in the House of Delegates providing only for a department of agriculture. This bill failed.[38] Virginia was not ready to help its farmers it seemed. The agitation continued through the next decade; General Richardson, among others, voiced his approval for State support of agricultural training and declared the European Fellenberg Idea aimed at the same thing.[39] Edmund Ruffin of the State society pleaded its case as did Solon Robinson in the House of Delegates. The *Southern Planter* felt the overseer needed training as much as the lawyer, doctor, or any other professional worker, and the best training for him would be of an agricultural nature.[40] Philip St. George Cocke put it this way:

> it is universally deemed essential to educate the statesman, the lawyer, the physician, the divine, the soldier, the sailor, the merchant, the artist and even the mechanic, and schools everywhere provide training for these occupations . . . whilst the farmer, he who is to follow agriculture as his vocation, is either left entirely without education or with such defective partial learning as to be acquired in schools which ignore the whole subject of the theory and practice of agriculture.[41]

His argument continued that if the State passed minor acts providing for drainage of mill ponds and granted funds regularly for the running of the University of Virginia and the Virginia Military Institute, it could at least appropriate sums for a professorship of agriculture. Cocke presented a plan providing for three professors to compose a department of agriculture at the university. Possibly his idea in providing for three was the fond hope that one might be allowed. This, of course, was not indicated. To add an incentive, he announced a personal gift of $20,000 to help get the plan underway, provided the Farmers' Assembly of the State society would have the power to choose the professors. This restriction was put in, said Cocke, in order that the society might have control of the fund. The university was immediately interested and committees of both the State society and Board of Visitors met to discuss the acceptance of this gift. The gift was refused by the Board of Visitors on the ground that the restriction would tie the hands of the administration. The General Assembly likewise refused the generous grant. Some of the members felt that an independent college might be set up with that initial sum, should Cocke agree.[42] Others felt that the Virginia

[36] *Ibid.*, 18: 178; *Farmers Register*, 2: 5, 3: 621–625.

[37] *Journal and Documents of the House of Delegates*, 1836, document 30, p. 2; *Farmers Register*, 2: 685–687; *Virginia Advocate* (Charlottesville), June 20, 1836.

[38] *Journal of the House of Delegates*, 1839–1840, Bill No. 79.

[39] *American Farmer*, 5: 45.

[40] *Southern Planter*, 14: 16.

[41] Report of the President of the Virginia State Agricultural Society Made to the Farmers Assembly, 1856, deposited in Virginia State Library.

[42] *American Farmer*, 12: 181, 215; *Southern Planter* 17: 128.

Military Institute might enlarge its offering to include a department of agriculture. Acting on the suggestion of establishing an independent college, certain members of the State society urged the purchase of the Bellona Arsenal in Chesterfield County for the site of a new college; others favored the buying of an old hotel near Charlottesville. There was the hope that $150,000 could be raised from the farmers for endowing a library and paying the salaries of two professors as a start. Although deeds for the purchase of the hotel were deposited with W. C. Rives and W. H. MacFarland in Charlottesville, no school for agricultural training was opened until after the war. During the war, Cocke and others continued to raise their voices for agricultural education.[43]

The State did appropriate funds for surveys for internal improvements and discovery of minerals; but was hesitant to provide surveys of agricultural resources and methods used in the State. The State society, on its own, hired Edmund Ruffin and Richardson to effect these surveys. Ruffin's report, published in 1855, was divided into the following categories: general feature, management of the lands, agricultural machinery, fencing, grain crops, livestock, dairy, forests, etc.[44] Richardson's job was: "to visit such counties, agricultural districts and particular localities, as may be deemed by the commissioner most suitable to aid and be aided by his services to the Society; to gather information, help form clubs, to report facts, to hold conversations, etc."[45] This he carried out to the letter and gathered funds for the society at the same time. Many praised him for his report.[46] Societies memorialized the General Assembly for such things as changes in the fence laws, and relief from the flour mill monopolist of Richmond and the British firms which charged exorbitant prices for Peruvian fertilizer; items which cannot be elaborated on here.[47]

Were the societies interested in national issues? To be sure, attention was given to them from time to time. One of the reasons for the societies in the first place was to oppose the raising of the tariff by Congress. The best reasons were stated by James M. Garnett when he stated that the tariff would accord special benefits to a few only, the farmer of the South would have to pay more for his manufactured products, and the tax would actually be an export tax on the South's trade.[48] Memorials to Congress repeated these arguments again and again while the agricultural journals never failed to give space to the same problem.

Again, the slave issue became an increasingly absorbing topic of the groups. Debates were held by the societies on slavery, and they went on record condemning the abolitionists. No more ardent champion could be found of the institution than Edmund Ruffin who stated his stand in his journal and in addresses before the societies. In one of the addresses before the State society, he discussed the southern way of life in this manner: "No other civilization is so well brought up as ours. Even now, it is comparatively rare in the Northern States to find, what is so common in the Southern States, a highly intelligent man, a well educated and respected family."[49] Slavery was necessary for the preservation of that way. A. H. H. Stuart, a rising political light, spoke in defense of slavery before the State agricultural society, saying: "let us then, in everything that affects the interest of the country, cultivate a comprehensive catholic national sentiment. Let us discard from our confidence and our councils all fanatical agitators who attempt by any device whatever, to array one portion of the nation against another."[50] Willoughby Newton, in an address before the Rappahannock Agricultural and Mechanics Society, declared: "slave labor is the main foundation of our prosperity. It is by far the cheapest, most effective, most tractable labor in the world. . . .I shall not treat of slavery as an ethics or a religion. I leave that question to rest on the impregnable arguments already before the public. It is sufficient for me, that it is an existing institution, inseparably connected with our interests, habits, comfort and taste, and upon its broad and firm foundations rests the commerce, wealth and highest civilization of mankind."[51] The State agricultural papers too carried articles in the same vein.

[43] *American Farmer*, 13: 113; *Richmond Enquirer*, Oct. 6, 29, 1858; *Richmond Daily Dispatch*, July 17, 1860, May 16, 1863.

[44] *DeBows' Review*, 18: 47.

[45] *Southern Planter*, 15: 5–7.

[46] *Ibid.*, 13–14: 148–150; *Richmond Whig*, Apr. 27, 1854; *Virginia Sentinel*, Nov. 22, 1853.

[47] *Southern Planter*, 13–14: 182–183, 373, 17: 577–587; *Richmond Daily Dispatch*, Sept. 25, 1852.

[48] *American Farmer*, 2: 89; *Richmond Enquirer*, Jan. 20, 1820.

[49] *Southern Planter*, 13–14: 9.

[50] *Ibid.*, 20: 320.

[51] Rappahannock River Agricultural and Mechanical Society, Proceedings, Fredericksburg, 1853, deposited in University of Virginia Library.

The significant institution in American rural life which the societies established in Virginia was the fair. They have proved as much value as the literary societies, lyceums, and chautauquas in helping to form opinions, in spreading information, and in encouraging reformation, not to mention the social values derived. Both local and State societies sponsored fairs from their beginning. The Albemarle Society held the first one at Charlottesville on November 1, 1819, where prizes ranging from $10 to $50 were offered for exhibits of livestock and crops, for the best plowed furrow and for essays submitted on the subject of soil conservation. The popularity of these fairs was so great that in a short time the members had to departmentalize their show.[52] The Fredericksburg Society held fairs beginning in 1823, where prizes were offered, addresses delivered, and a fine social time enjoyed.[53] In the 40s and 50s quite a number of local fairs were held in Charleston, Charlottesville, Fairfax, Fredericksburg, and Richmond. The exhibitions were elaborate, showing products of other States and foreign countries as well as their own. Farm machinery manufactured at Philadelphia, Utica, New York City, and elsewhere was exhibited. South American countries as well as countries of Europe frequently had representations. The Seaboard Fair held at Norfolk in 1858 was described in the *American Farmer* as a parallelogram-shaped lot with buildings for livestock, manufactures, and booths of ladies handiwork and vegetables. In the afternoon vice-president John Tyler addressed the local society in an assembly hall, which was cleared for a ball in the evening.[54] Crowds were in attendance at these fairs, and one had this to say of them that "here was to be seen the beauty and fashion of the city mingling with the sweetness and simplicity of the country."[55] Other added attractions were mentioned too. For example, a Reverend Mr. Pendleton gave a lecture on the solar system with lantern slides at the Hanover Agricultural Society Fair held at Taylorsville in August 1843; again, at the Fairfax Fair a parade displayed carts of cattle, sheep, poultry, and crops.[56] The railroads provided special fair rates for travel and freight during the season to add extra incentive to attend. The serious purpose of the fairs was well expressed by Charles W. Dabney at the Taylorsville Fair in 1842, when he declared in his address:

> Let us, then, Mr. President, and gentlemen of the association, deeply and solemnly impressed with the dignity of the vocation and the vital interests connected with it, devote ourselves earnestly and faithfully to the attainment of these objects. Let us remember how much of our country's welfare and our children's depends upon our efforts.[57]

Great was the interest in the Old Dominion when the first of the fairs of the State society was scheduled for November 1–4, 1853. Philip St. George Cocke, president of the society, published an appeal saying:

> Farmers of Virginia! We appeal more particularly to you, as a matter of personal and professional, as well as of state interest and pride to prepare for this exhibition. Come from the east and from the west, from the north and from the south of our glorious Old Dominion. Come with your wives and your daughters. Come with your horses, with your cattle, and your sheep and with your swine, with your implements of agriculture and with the products of your soil. Rally in mass, and come up one mighty host of farmers inspired by the progressive spirit of the age. Come prepared to show what the agriculture of our state is now and what you design it to be in the future, in which sloth will be a crime, mediocrity a reproach and ignorance a disgrace.[58]

The Richmond city council provided the grounds and appropriated $6,000 toward the expenses of the fair. General Richardson was sent by the society into the eastern counties and the Valley of Virginia to stir interest in the fair. When the day came a long prize list was made out, and a Madam Sontag awarded the prize of $100 to the winner of the plowing match. On the third day 20,000 were in attendance, and $50,000 was raised for the society by voluntary contributions.

The second fair was even more impressive. Edmund Ruffin prepared the prize list, while the

[52] *American Farmer*, 1: 272, 2: 82, 7: 43, 284, 11: 283; *Farmers Register*, 6: 543.

[53] *American Farmer*, 6: 268–276, 370–371; *Farmers Register*, 7: 753.

[54] *American Farmer*, 10: 55, 11: 4, 12: 106, 13: 55, 14: 212, 259–261.

[55] *Southern Planter*, 1: 220–221, 2: 99; *Richmond Whig*, June 2, 1843.

[56] *Southern Planter*, 9–10: 110–111; *Richmond Whig*, Aug. 26, 1843.

[57] *Richmond Enquirer*, May 25, 1842.

[58] Transactions of the Virginia State Agricultural Society, Journal, 1853, p. 85; Letter of Philip St. George Cocke to N. F. Cabell, dated Aug. 29, 1853, found in the Cocke papers filed at University of Virginia.

city of Richmond provided some $34,000. A newspaper, after commending the State society for such a fine exhibition, concluded by saying "that this goes to show that the negro hasn't crushed all initiative."[59] Of the fair the next year, the *Richmond Whig* said: "We don't choose to expatiate upon this dangerous theme, lest we should furnish proof in ourselves of that ancient saw that every man is crazy in some corner of his mind. But whatever damage may be done to the interest or affections of susceptible editors, we hope old Virginia may continue annually through countless ages to make such exhibition of her jewels."[60] In 1858, the Petersburg Central Agricultural Society agreed with the State society to hold a union fair at Petersburg. The grounds formed a series of inclined planes with the exhibition booths and eating salons on the various levels. The crowd filled the town to overflowing, and again the fair proved a success. The final fair before the war was a united affair with such new products on display as solidified milk, French Conical Washing Machines, and the like. The papers of the day were ardent in praise of the fine display, the location, and the attendance.

These fairs were considered, whether on a State or local scale, valuable politically, economically, and socially. They helped spread scientific knowledge and stir interest in general agricultural improvement throughout the State and Nation. The social value was realized too by the *Richmond Whig*, in 1857, when it declared:

> We shall witness, moreover, specimens of the sturdy lords of the soil, congregated from all sections of the Old Dominion, and what will be more lovely and animating than all else, our eyes will be gladdened with a sight of the mothers, wives and daughters of our brave yeomanry of the plow, mingling joyously in the gay festival bringing to it graceful samples of their own tasteful industry.[61]

The agricultural societies promoted publication of articles in journals, urged members to support by subscription the latter, and established libraries of "agriculturana" for their members. Virginians like John Taylor and Edmund Ruffin wrote regularly on the subject of agricultural reform for the journals in and out of the State. Both men were editors of papers, the *Arator* and the *Farmers Register*, respectively. The *Southern Planter* was published from 1841 on; while the newspapers of the time carried news regarding the societies, papers presented at the meetings, and fair activities. The *American Farmer*, the *Cultivator*, and the *Plow, Loom and Anvil* were out-of-state papers which Virginia farmers read also. The *Cultivator*, a New York publication, published figures of its subscribers. Add to this the number of libraries of planters with material in agriculture and one can see the great concern manifest in the basic economy. Speaking of libraries, the Richardson report of 1854 declared that the State library in Richmond had 100 entries pertaining to agriculture.[62]

What results can we claim for this agricultural renaissance of 1830–1860? Kathleen Bruce, some twenty years ago, questioned the statement that Virginia was declining agriculturally in this period. After a further sifting of the evidence, the speaker must conclude with Miss Bruce that such a statement is fallacious. The census reports, the surveys, letters, and news articles of the day all show that Virginia was diversifying her agricultural program, improving her property values, raising better varieties of crops and livestock, and increasing her production. Ruffin's report stated that the land valuation of the Tidewater had stepped up from $17,000,000 to $30,000,000 as a result of the use of cover crops, marl, and proper drainage. In an address before the State society he further elaborated on the same when he stated that Charles City County by the use of marl had increased its production of grain and potatoes by one-third.[63] The Fairfax and Valley areas reported better crops, and a northern journal reporting this, declared it was the result of the employing of scientific methods.[64] Franklin Minor, in an address before the Albemarle Agricultural Society, declared that since the formation of the society some twenty years ago, the farm land of the area had doubled in value.[65] In B. M. Jones' report,

[59] Virginia State Agricultural Society, Second Annual Exhibition, 1854; *Southern Planter*, 15: 353; *Richmond Daily Dispatch*, Nov. 10, 1854.

[60] *Richmond Whig*, Nov. 3, 1855.

[61] Eighth Annual Exhibition of Virginia State Agricultural Society, Officers, Rules and Regulations, 1858; *American Farmer*, 2: 212; *Southern Planter*, 19: 519, 774–775, 20: 417, 756; *Richmond Daily Dispatch*, Jan. 31, June 30, 1859; *Richmond Whig*, Oct. 27, 1857.

[62] *Southern Planter*, 16: 123, 20: 550–552; *The Cultivator*, July 1838, December 1839; A. L. Demaree, *The American Agricultural Press, 1819–1860* (New York, 1941), 66.

[63] *DeBows' Review*, 14: 34–46; Transactions of Virginia State Agricultural Society, Journal, 1853.

[64] *The Cultivator*, February-March 1844.

[65] Address of Franklin Minor before Albemarle Agricultural Society, Nov. 1, 1845, deposited in Virginia State Library.

made by the State, there are letters testifying to the general improvements as a result of agricultural reform and internal improvements. One written by William Overton of Louisa, dated March 16, 1860, spoke of land values in his county increasing from 100 to 150 percent while wheat production had doubled.[66] W. H. Richardson declared in his report that the State was arising to new heights from the southside to the mountains. Finally Willoughby Newton of the State society praised the State for the many improvements, saying in part, that as a result immigration had stopped, agriculture had conquered politics, and permanent prosperity was no longer in doubt.[67] The *U. S. Census Reports* give evidence of increases in livestock and crop production for the 1830–1860 period. To take several samples—both corn production and the number of cattle had increased by 9 percent.[68] The tobacco crop was being restricted more and more to the southside while grain crops and livestock raisers were taking over the Tidewater and Piedmont areas.[69] Agricultural reform was the order of the day and the organizations, clubs, fairs, and journals were responsible for the new order.[70] Fincastle's *Herald of the Valley* had stated well the farmers' creed:

> Let this be held the Farmer's creed:
> For stock seek out the choicest breed;
> In peace and plenty let them feed;
> Your land sow with the best of seed;
> Let it not dung or dressing need;
> Enclose, plough, reap with care and speed,
> And you will soon be rich indeed.[71]

[66] B. M. Jones, *Railroads Considered in Regard to Effects Upon the Value of the Land* (Richmond, 1860).

[67] *American Farmer*, ser. 4, 1853, 343; *Southern Planter*, 14: 354; *Plow, Anvil and Loom*, 12: 396; *Richmond Daily Dispatch*, June 24, 1853.

[68] U. S. Bureau of the Census, 6th, 7th, and 8th Census, 1840, 1850, 1860 (final reports).

[69] L. C. Gray, *History of Agriculture in the Southern United States to 1860* (Washington, D. C., 1933), 2: 921.

[70] Kathleen Bruce, "Virginia Agricultural Decline to 1860; A Fallacy," *Agricultural History*, 6: 5 (January 1932).

[71] *Herald of the Valley*, Nov. 9, 1822.

THE HISTORICAL SIGNIFICANCE OF THE TARIFF ON RICE

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Agricultural tariffs bear more than passing interest to the economic and political historian, because they represent the exception rather than the rule in American tariff history.[1] Though Henry Clay's "American System" and William McKinley's "Full Dinner Pail" envisaged tariffs for the farmer as well as for the industrialist, the main tariff concern in 1816, 1890, and 1950 has been protection for *manufacturing*.

Some American agricultural commodities have had long histories of tariff protection; sugar has been the most notable of these, but wool, meat, and rice have also been of leading importance. The rice tariff, however, has received but little attention from historians, probably because rice has always been eclipsed by its close neighbor in the Gulf Coast region: namely, cane sugar. Yet a study of the rice tariff sheds light on the whole subject of agricultural tariffs.[2]

When studying a particular tariff, one is usually interested in the following questions: (1) Is any protection necessary for the survival of the industry? (2) If so, is excessive protection being asked or received? (3) Is the industry worth protecting? and (4) What have been the historical results and significance of this tariff?

In the case of the tariff on rice, the first two of these questions have been ably answered by Arthur H. Cole, whose study led him to conclude that some protection was necessary for the survival of the industry because of special advantages enjoyed by Asiatic rice producers, and that on the other hand excessive protection was both

[1] This article was presented at the joint session of the Agricultural History Society and Mississippi Valley Historical Association in Chicago on Apr. 19, 1952.

[2] The whole field of tariffs needs much more study by economic historians than they have given it in the past. Taussig's work has been accepted as the "last word" all too literally; not only does a new tariff history need to be written, but much specialized work remains to be done for the first time. Do see, however, for the sugar tariff, Frederick W. Taussig, *Some Aspects of the Tariff Question* (Cambridge, 1929), 53–114, and Philip G. Wright, *Sugar in Relation to the Tariff* (New York, 1924).

sought and obtained by the American rice interests.[3] Cole does not, however, deal with the second pair of questions. One of these questions, the desirability of rice protection, has had attention from a number of writers,[4] but the final question, "What have been the historical results and significance of the rice tariff?" is largely untrod ground on which this writer dares to tread.

One historical result of the rice tariff was its aid in breaking down the traditional Southern hostility towards tariffs in general. To the extent that the South became more amenable to tariff protection, it became somewhat better reconciled to the Northern domination of the Federal Government since the Civil War. Sugar may have been more important than rice in this regard, but rice has affected the political and tariff views of farmers on the prairies of Louisiana, Texas, and Arkansas where not much concern has been felt for sugar. Thus the rice belt spokesmen in Congress, such as Arsene Pujo of Louisiana, Joe Robinson of Arkansas, and Tom Connally of Texas added their strength to the tariff cries of their sugar associates, such as Senators Broussard, McEnery, and Ransdell of Louisiana.[5] Thus in 1922, Robinson was saying to Congress: "Every argument which may be urged in support of a tariff on wheat or other cereals applies with equal or greater force to the rice product."[6] Before claiming too much for rice, however, it must be admitted that there were other interests in the rice belt which also desired protection and helped to make tariffs popular; these were the yellow pine, sulphur, and in recent days even the cotton interests.[7]

The change in the Southern attitude towards tariff protection was not without its embarrassments. Rice and sugar belt spokesmen had to bear tongue-lashings from more orthodox agricultural sections.[8] In the debates over the Dingley Tariff of 1897, the Populist Senator from Nebraska, William Allen, launched into a tirade against the inconsistency and apostasy of the rice and sugar senators for engaging in the tariff "grab."[9] And inconsistency was not an inappropriate accusation, for at the same time that Senator McEnery of Louisiana was urging protection for rice and sugar, he said: "There can be no sort of apology for any tariff whatever upon iron and iron ore."[10]

Sometimes the rice spokesmen urged protection as a matter of dire necessity to save the "suffering industry" from the "degradation" of competing with "cheap Asiatic labor."[11] From the old South Carolina rice fields came the cry: "It is not a question of favor. It is not a question of asking more or less in relation to other industries, but simply a question of life or death."[12] Not even the Congressional "angels of mercy," however, were able to save the South Carolina rice industry. One is tempted to think that had John C. Calhoun lived to see the day when Carolina's rice industry, once so free and successful, had now to beg for tariff protection for its survival, he would not have been so concerned over the tariff evil. Perhaps this might be considered as further evidence that the Civil War was not "inevitable."

The Southern tariff supporters in the rice belt found rationalization for their abandonment of free trade in the attitude that ". . . if there are [any] tariffs, then let us get our share of them."[13] Thus they did not intend that the North should get all of the advantages of protective tariff. Here again John C. Calhoun is brought to mind, for back in 1816 he had supported the protective tariff principle under the belief that the South would get many of the benefits; when the benefits failed to materialize, he began to oppose protection on *principle*. Now at last the South was in a position to benefit from tariffs, and the Calhoun *principle*

[3] Arthur H. Cole, "The American Rice-Growing Industry: A Study of Comparative Advantage," *Quarterly Journal of Economics*, 41: 642–643 (1927). My own study leads me to the same conclusions as Cole's.

[4] Most writings on the merits of the rice tariff have been highly biased products of interested parties; see, however, Vernon D. Wickizer, *Rice in the Western Hemisphere: Wartime Developments and Postwar Problems* (Stanford University Food Research Institute, War-Peace Pamphlets, 7).

[5] The *Congressional Record* is full of tariff speeches by these men; see, for example: *Congressional Record*, 54: 667 (1909); 62: 6256 (1922); 71: 5574 (1929).

[6] *Congressional Record*, 62: 6254 (1922).

[7] "Tariff Hearings before the Committee on Ways and Means of the House of Representatives," 60 Congress, 2 session, *House Documents* (1909), no. 1505, 4: 3668.

[8] *Congressional Record*, 30: 1591 (1897).

[9] *Congressional Record*, 30: 1588 (1897).

[10] *Congressional Record*, 30: 1416 (1897).

[11] *Congressional Record*, 30: 319 (1897); "Tariff Hearings before the Committee on Ways and Means, 1896–97," 54 Congress, 2 session, *House Documents* (1897), no. 338, 1: 855.

[12] "Tariff Hearings, 1896–97," 1: 848.

[13] "Report of the Secretary of the Treasury on the Revision of the Tariff with Accompanying Documents," 49 Congress, 1 session, Senate *Executive Document 49* (February 16, 1886), 512.

was tossed out the door by the Southern Democrats, who were now claiming that even the traditional Democratic heroes, Jefferson and Jackson, had been protectionists.[14]

Time brings change; for example, in 1909 Louisiana's Senator Ransdell was rather apologetic for his support of rice and sugar protection, saying that since the Republicans were in control, the Payne-Aldrich bill would not be a balanced revenue tariff in any case, and so he might as well fight for protection on the products of his state.[15] But he was giving no apologies by 1929; rather, he was an out-and-out protectionist who was surpassed in his pro-tariff votes by only one other senator *his own colleague from Louisiana*, Broussard.[16]

By 1929 pro-tariff views were no longer extraordinary in either Southern or Western agricultural regions.[17] In the tariff debates of 1922, not a voice was raised for "revenue only," rather, both Democrats and Republicans were only interested in how much protection there would be.[18] The "Farm Bloc," composed of Southern Democrats and Western Republicans, was now hard at work for agricultural tariffs on almost all farm products.[19] It is significant that although the Reciprocal Trade Agreements policy has considerably altered it, the astronomically high Smoot-Hawley tariff has never been repealed by the succeeding Democratic congresses. Surely the rice industry has had some part to play in bringing about this revolutionary change in the attitude of the South and of the Democratic party towards the tariff.

The major opponents to the tariffs on rice have been: (1) the champions of the consumer, (2) the brewers, (3) the rice millers of San Francisco and New York, and (4) the importers of foreign rice. Senator David I. Walsh of Massachusetts, a champion of the consumer, accused the rice industry of operating in the form of a trust to maintain higher prices at home than abroad.[20] But amongst the consumers the Puerto Ricans were the most directly affected by the rice tariff. The island people were far more dependent upon rice, which was a large element of their diet, than was the average mainlander. The benefits of the Puerto Rican's enforced American connection were sometimes questioned in face of the higher cost of rice that this connection entailed. That the Puerto Ricans were in effect subsidizing the Louisiana rice growers was only partly offset by the tariff benefits accruing to Puerto Rican sugar. However, during the first and second World Wars the Puerto Ricans were fortunate in having an ample source of rice from the United States at a time when Asiatic supplies were sharply curtailed. Whether this was sufficient compensation is certainly questionable.[21]

The American brewers were not concerned over the rates on polished rice particularly, but they were mightily interested in the rates on unfinished and broken rice which they used in their beer. When prohibition began their interest and influence declined, but the repeal of the Eighteenth Amendment again made them important opposers of rice tariffs.[22]

The rice milling interests of the nation were split in their attitudes towards the tariff. Those who depended on the domestic rice industry for most of their business strongly supported the tariff on unmilled rice as well as the milled product; those who milled the imported rice in large quantities strongly opposed the tariff on unmilled rice though seeking protection for their own finished product. The millers of the Gulf Coast belonged to the first group and were vociferous in their defense of the tariff; in some respects they had more to lose than the rice growers because it would be harder to convert a mill than a rice farm to other production.[23] The millers of San Francisco and New York, on the other hand, belonged to the other group, which imported large quantities of foreign rice, and their opposition to the tariff on unmilled rice was vigorous indeed. During the debates on the McKinley bill, the rice growers were warned: "The New Yorkers are slick and laying low, and I would impress on the Louisiana delegation to keep their eyes open, especially on

[14] *Congressional Record*, 71: 5056 (1929).

[15] *Congressional Record*, 44: 842 (1909).

[16] *Protectionist*, 42: 6–9 (May 1930).

[17] See C. A. Wiley, "The Economics and Politics of the Agricultural Tariff," *Southwestern Political and Social Science Quarterly*, 5: 273–274 (1924).

[18] Abraham Berglund, "The Tariff Act of 1922," *American Economic Review*, 13: 28 (1923).

[19] *Congressional Record*, 62: 1089–1097 (1922).

[20] *Congressional Record*, 62: 1089–1091 (1922).

[21] Rexford G. Tugwell, *The Stricken Land, the Story of Puerto Rico* (New York, 1947), 169, 284, and 548; Wickizer, *Rice in the Western Hemisphere*, 38–39; U. S. Department of Agriculture, *Yearbook, 1927*, 557–558.

[22] *Congressional Record*, 30: 1587–1592 (1897); "Tariff Schedules—Hearings before the Committee on Ways and Means, House of Representatives," 62 Congress, 3 session, *House Documents* (1913), no. 1447, 2718–2719.

[23] *Ibid.*, 2710–2717.

rice."[24] One of the New Yorkers later retorted: "... [W]hile the youngest member thereof [of the Louisiana delegation] was as yet unconceived and others in swaddling clothes the writer hereof was advocating (1865) before your honorable committee the retention of the war duties ... [for] the more speedy rehabilitation of the Southern rice industry...."[25] And so the battle raged.

In addition to the above mentioned interests, importers of Italian rice, who served a special market, and food manufacturers, such as Campbell Soup, who used special patna rice that could not be grown in the United States, opposed any attempts to force them to consume the less desirable American product.[26]

Thus, the rice tariff represented the spectacle not only of free traders opposing protectionists, but of the special interests brawling amongst themselves. If this influence of the struggling interests was not the best for America, another influence, stemming from an equally selfish source, worked to "Uncle Sam's" credit. This was the interest which the rice spokesmen took in Philippine independence.

From the earliest moment in 1900 when Senator McEnery of Louisiana submitted a resolution declaring that the United States did not intend to keep the newly won Philippines permanently,[27] the rice belt made every effort to speed the separation. This attitude was based on the wholly selfish view that a free Philippines would not enjoy the advantages of importation of rice into the United States, which a dependent Philippines either had or might in the future obtain. Here again sugar played a larger role than rice in making "Liberators" out of congressmen like McEnery, Broussard, and Pujo, but rice was an important element. Pujo, who had been born and raised in the Louisiana rice belt, expressed his concern over the danger that Asiatic rice might be imported cheaply into the Philippines and re-exported at low rates into the United States.[28] Moreover, he feared that the day might come when the Philippines, then still importing rice, might grow surplus amounts of rice for exportation to America.[29] All he wanted, said Pujo, was that "a Filipino shall not be given any advantage over an American,"[30] which would indicate that Pujo was not exactly looking upon the Filipino as his "little brown brother."

Pujo proclaimed that it was unjust for his constituents to have to pay more for the "Philippine experiment" than other American citizens,[31] and so he felt a protective tariff on Philippine rice was wholly just. But independence was the main goal of the rice men, for that alone would give them real security against the intrusion of cheap rice; hence the rice representatives in Congress urged the rapid freeing of the islands, but with heavy restrictions against Philippine trade in the meantime, claiming that the more completely Filipino products could be isolated from American shores, the sooner and easier the islands could make the adjustment towards independence.[32] Fortunately, all American "altruism" has not been based on such selfish motives, but the attitude of the rice districts towards Philippine independence is an interesting example of ways by which economic motivation can be useful in obtaining a non-economic ideal. The "invisible hand" of Adam Smith, if only a skeleton of its former self, still waves at times.

An historical analysis of the rice tariff, therefore, casts some light on the changing nature of the American economic and political scene since the Civil War. Neither the South nor the Democratic party are quite what they were, and the American rice industry has been a not unimportant factor in this change. At times the struggle over the rice tariff has represented little better than a brawl between quarreling interests, since brewers, millers from New York and California, Puerto Ricans, Italian Americans, Japanese Americans, and many others have opposed the protective aids given to the American rice growers. If the Puerto Ricans have been hurt by the rice tariff, the Filipinos have benefited from the interest that rice senators and representatives took in their struggle for freedom. Thus, behind the rice tariff, as behind all tariffs, there is more than meets the eye.

[24] "Revision of the Tariff: Hearings before the Committee on Ways and Means, 1889–90," 51 Congress, 1 session, *Miscellaneous House Documents* (1890), no. 176, 941.

[25] "Tariff Hearings, 1896–97," 1: 860–861.

[26] *Ibid.*, 857; *Congressional Record* 71: 5578 (1929); U. S. Congress, *Tariff Information, 1921: Hearings on General Tariff Revision before the Committee on Ways and Means, House of Representatives* (Washington, 1921), 3: 1713–1718.

[27] *Congressional Record*, 32: 1830 (1899).

[28] *Congressional Record*, 40: 918–921 (1906).

[29] *Congressional Record*, 44: 668 (1909).

[30] *Congressional Record*, 40: 921 (1906).

[31] *Congressional Record*, 44: 668 (1909).

[32] *Congressional Record*, 44: 1227 (1909), and 71: 4062–4077 (1929).

CATTLE RAISING IN PALESTINE

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History and Origin of Cattle in Palestine and Neighboring Countries. The region of Palestine and neighboring countries is of special interest to us as harboring the primitive wild cattle *Bos taurus primigenius*, known variously as *ur*, *reem*, and *rimu*, as well as the *Bos brachyceros*, from which originated cattle domesticated there thousands of years ago.

In searching through the Bible for the earliest mention of cattle, we come across reem, which, according to Duerst,[1] is identical with the Babylonian and Assyrian rimu, a name for wild cattle of the type of *Bos taurus primigenius*. Some old Babylonian bas-reliefs showed cattle with only one horn, and therefore rimu was incorrectly translated as unicorn. This misconception arose because Babylonian artists used a perfect profile in their modeling, which would naturally show only one horn. The Sumerians also knew primitive cattle and drew them in their cuneiform script, an idiogram which showed two horns.

The most beautiful pictures of urs can be found in the palace sculpture of Assyrian kings, particularly in the palace of King Assurnarsipal, who ruled from 880–861 B.C. Here we see the king riding a three-wheeled carriage, delivering a sword thrust into the neck of the attacking bull, while another bull is lying on the ground felled by many arrows. The bulls shown in the Assurnarsipal sculpture are rather small as compared with horses and people. On the other hand, the Bible describes large urs, and a bronze plate publicized by Layard represents urs of great size as compared with lions and hunters. There is therefore a controversy with regard to the size of urs, and, according to Duerst, the size of urs as depicted in the Assurnarsipal sculpture is not to be taken seriously.[2] He claims that the artist deliberately reduced the size of the ur in this work, while only the Layard plate gives the size of these animals exactly and proportionately. However, it seems inconceivable that Assyrian artists who described the Assurnarsipal hunting scenes so vividly would reduce the size of the urs. It would seem that they would more probably make the wild bulls appear even larger in order to flatter their king by showing his skill and strength. We may therefore assume that both the Assurnarsipal and Layard scenes are authentic, and that there existed two sizes of urs.

The primitive ur is relatively small, orbital arches protrude above the forehead-nose line, eyes are large, and horns are somewhat longer than the head and thick at the base. The lower jaw is strongly developed, and the mandible is curved at a wide angle. The neck is strong, withers high, as in all wild animals, and sacrum slightly sloping. Shoulders are quite oblique and the extremities slender.[3]

In the Bible, book 4 of Moses, chapter 23, verse 22, God's step is compared with the speed of reem, and in chapter 33, Jehovah's strength is compared with the strength of the reem and his horns.

In Psalm 22, verse 13, "I am surrounded by many bulls, Bashan's bulls surround me," the habitat of these animals is mentioned for the first time. Bashan is located in the Jordan Valley, where even now large herds of cattle are raised. In the Book of Job, chapter 39, doubt is expressed as to whether a reem could be harnessed to plow a furrow or harrow a field, used for threshing, or trusted to do any agricultural work. On the other hand, it is mentioned in many passages that cattle were domesticated and capable of doing various types of farm work, which seems to prove that wild cattle and domestic cattle existed simultaneously in this area.

Reem lived not only in the north, where there was good pasture and plenty of water, but apparently also inhabited some arid localities in the south of Palestine, as indicated by the mention of Raamat Negev, a southern city of the tribe of Simon, and Raamat Gilead, also in the south, of the tribe of Gilead. The root of Raamat and Reem is the same. We also know of reem from the annals of the deeds of Tiglath-Pileser I on the prism of the Temple of Anu where there is a description of a hunt of giant remi which took place in the desert of Mitani.

[1] Johann Ulrich Duerst, *Die Rinder von Babylonien, Assyrien und Ägypten* (Berlin, 1899), 7–8.

[2] *Ibid.*, 9.

[3] Martin Wilckens, *Grundzüge der Naturgeschichte der Haustiere*, ed. J. U. Duerst (Leipzig, 1905), 235–237.

Assyrian literature mentions rimus which inhabited Northern Syria, and on the obelisk of Tiglath-Pileser I of 1120 B.C. is written: "Wild cattle [rimi] destructive, powerful ones did he kill in the city of Arazik, which lies before the land of Chatti, and at the foot of Lebanon. Live young cattle did he capture and made herds out of them."

When we realize that according to the English statistics of 1921, there were in all of Palestine about 80,000 head of cattle, we are surprised by the large figure of 20,000 head of cattle captured and carried off to Babylonia in the Palestine wars of 743–740 B.C. and 738–737 B.C. by Tiglath-Pileser II[4] a fact which would point to the existence of great herds of cattle in Palestine in those times.

Egypt, too, can boast of the existence of wild cattle in olden times, and according to Adametz and Hilzheimer, this territory is the habitat of the African type of *Bos primigenius* which is closely related to the Asiatic remu and is the progenitor of the Egyptian "Longhorn."[5]

Hilzheimer made a careful examination of part of the skeleton head of a wild bull which Markgraf found in Fajum Deluvium in the year 1910. He came to the conclusion that it is a sub-species of the ur and called it *Bos primigenius halmi.* Through this find it has been proven that the wandering Hamites, who came to Egypt from Syria and Asia Minor with their large herds, found existing cattle in the land. Before the opening of the Suez Canal Asia was directly connected with Egypt and Africa, and Palestine served as a bridge between both continents. There is, therefore, the possibility that *Bos primigenius halmi* had its origin in the Asiatic ur, with which it is morphologically similar.

Egyptian sculpture describes Syrian cattle, which the Egyptians bought from the Phoenicians, as having short horns and high withers. Many herds of Palestinian cattle of the brachyceros type found their way into Egypt following war expeditions such as those of Phios I, who, in the year 2550 B.C., waged war against the Bedouins, and again following the Battle of Megiddo during the reign of Thutmosis III, 1501–1447 B.C. Under Menaphta, 1225 B.C., there was a peaceful penetration of cattle into Egypt when wandering shepherds emigrated with their herds from Edom.

[4] George Smith, *Assyrian Discoveries* . . . (London, 1875), 274, 279.

[5] Leopold Adametz, *Herkunft und Wanderungen der Hamiten* . . . (Wien, 1920).

Cattle which are now being raised in the Lower Nile Valley under the name of the "Egyptian" cow, never show long horns, but have either rudimentary horns or very short horns, and, according to Hartmann, have all the characteristics of the Asiatic brachyceros type.[6] It is well to mention that there has long been an interchange of this breed between Egypt and Syria. We find this "Egyptian" cow in the region around Damascus, where it has become somewhat influenced by the Zebus. The Syrians here, who breed this cow extensively, call it the "Damascus" cow.

At this point it would be worth while to consider whether the domesticated cattle of Palestine originated from ur, *Bos primigenius*, or from the brachyceros type. One section of the Bible describes ur as a large wild animal of awe-inspiring strength and speed, having large horns, and not to be trusted to do any agricultural work, while other sections (Job) describe cattle with short horns used for plowing, harrowing, threshing, as well as for sacrifices.

It would seem, therefore, that Palestine harbored both types of cattle, and the domesticated cattle described above did not originate from the ur, but from *Bos brachyceros*, a type which even now is well preserved in present-day native Arabian and Golan stock.

It is claimed that *Bos brachyceros* has its origin in Asia Minor, and that it was brought into Syria and Palestine by wandering shepherds. However, it is possible that both Syria and Palestine also contributed to the development of the characteristics of the original *Bos brachyceros*. A calendar clay tablet found by McAlister in Gezer near Ramleh, Judea, describes in detail the monthly work program of a farmer and the agricultural implements he used over three thousand years B.C. It describes a threshing sled and a wooden plow with its steel prolongation (Illustration 3 shows modern Arabian plow).

From the Bible, sculpture, bas-reliefs, and other finds, it seems to be established that the Syrian-Palestinian domesticated cattle were of the brachyceros type. This is also confirmed by Plinius (Naturalis Historia, lib. 8) and Oppian (Cynegetica 11) who tell us that the Syrian cattle had short horns with protruding humps at the withers and were fawn and reddish-brown in color. We can also see the brachyceros type from the tomb-

[6] R. Hartmann, "Die Haussäugetiere der Nilländer," *Annalen der Landwirtschaft* (Berlin), 44: 19–21 (1864).

stones of Assurbanipal 667–628 B.C. and Sargon 720–705 B.C., as well as from the Clay Tablet of Larsa. These cattle all have short horns, curved towards each other with somewhat broad and short heads. The nose is relatively long, neck rather slim with a small dewlap in front of the chest. Shoulders are slant, hind legs well developed and strong. Hoofs are small and round and the dewclaws are long and narrow, which is a characteristic of brachyceros cattle. The tail reaches below the hock. On some of the animals there is a small hump at the withers, while on others, when the hump is not developed, the withers appear to be very prominent. The hump, as described before, seems to indicate that there is an influence of Zebu on Syrian cattle. It is accepted that the Zebus originated in northwest India, where, according to Clay, in 1800 B.C. Zebus are depicted pulling a plow.[7] It is claimed that these Zebus found their way into Mesopotamia from India, and were brought from there into Asia Minor and Syria by the marauding Hatites. The Zebus became acclimated to their new habitat, and were able to exert some influence on the breeds of cattle already present in the land. Although it is accepted that the Zebus originated only in India, there may also be a possibility that the hump developed independently in Mesopotamia, Asia Minor, and Syria. The hump represents nothing but a deposit of fat developed as a food reservoir in the fight for the preservation of the fittest, in regions where there are seasons of plenty alternated by poor pasture. We find that these conditions are present in Syria and Asia Minor, countries which gave origin to the sheep of the "fat tail" type. The analogy between the "fat tails" and hump may be an indication of their origin from the same region, as it is a characteristic development or mutation due to climatic and soil conditions.

Cattle of Palestine in Modern Times. Cattle breeding in Palestine reflects varying standards of animal husbandry, corresponding to conservative and progressive elements in the population. The conservative element is represented by the fellah, the Arab peasant who clings to his time-honored practices. European colonists who came to the country in the late 19th century and after World War I in 1918, represent progressive elements which improved the native stock through selection and crossbreeding, and introduced European strains.

[7] Bruno Meissner, *Grundzüge der Babylonisch-Assyrischen Plastik* (Leipzig, 1915).

The cattle of Palestine can be classified as follows:[8]

1. Native Palestinian
   a. Arabian
   b. Golan
2. Native Syrian
   a. Damascus
   b. Beirut
3. German Cross breeds
4. Grade cows
5. Imported pure-breeds

This article will deal only with the Arabian and Golan breeds of native Palestinian cattle.

Arabian Cattle. The Arabian cow is native to the region of Palestine west of the Jordan, and is bred almost exclusively by Arab fellahim and half-Bedouins. It is found as far south as below Gaza, and as far north as Metullah; in the westerly Mediterranian coastal strip, in the valleys of Emek, Israel and Jordan, as well as in the mountains of Galilee and Judea. Even in the neighborhood of Jericho, an oasis situated in the tropical El Gor Valley, small herds of these cattle can be seen.

The animal is quite small, its height at the withers, which are slightly raised, being 100 to 108 cm., averaging 103.3 cm. (see Illustration 1). Height at the sacro-illium joint is about 5 cm. higher than at the withers. The sacrum in most cases is almost perfectly horizontal. The trunk is relatively long. Formation of the pelvis is specific, and clearly defined. It forms nearly a perfect square, is well formed, and wide enough to allow for easy calving. Width of pelvis at hips from one tuber coxae to another averages 37.91 cm. and length from the tuber coxae to tuber ischii, is nearly the same. In general the exterior is strong, the shoulder oblique and well developed, and the legs lean and long. Hoofs are strong and well rounded; the chest is relatively well built and properly arched. Circumference of the chest aver-

[8] The author made the first systematic study of these breeds over a period of 3½ years. The work was begun in Palestine in 1923 and accepted as a doctorate dissertation by the Department of Natural Science of the University of Halle, Germany in 1925, under the title "Rinderzucht in Palästina." The research in Palestine was conducted independently except for a period of five months when material was gathered under the auspices of the Zionist Colonization Department. The measuring rod was used for determining height, calipers for width, and tape measure for circumference and weight. Milk butterfat analyses were made using the German Gerber method, which gives the same results as the American Babcock test.

ages 144.88 cm. The circumference of the abdomen depends on the period of pasture and pregnancy, and of course varies very greatly. The dewlap is quite well formed and has a frill. The head is relatively long (38.61 cm.) and narrow with a long nasal bone. The width at the upper forehead is the mean between the wide orbital space and the narrowest space in the middle of the forehead. The bulge and arch between the horns, the raised orbitals above the nose line, and narrow dewclaws which appear in this breed, are considered specific characteristics for the brachyceros type of cattle. The horns are small and curved and not too firmly embedded in their shallow sockets. The horns break off easily and this may account for the large number of hornless cows, and the frequent incidence of cows with horn stumps. 29.26 percent of Arabian cattle are hornless or have horn stumps. The ears of Arabian and Golan cattle are wider in proportion than those of other breeds. There does not seem to be any influence of the Zebu in the native Arabian stock as in the case of Syrian cattle. For further details of exterior measurements of 78 cows see Table 1.

TABLE 1. Exterior Measurements of Arabian and Golan Cattle

	Arabian		*Golan*	
	Absolute cm.*	*Relative* cm.	*Absolute* cm.	*Relative* cm.
Height Withers	103.30	100.00	109.42	100.00
" Lumbar-thorax	104.54	101.17	109.78	100.45
" Illio-sacrum	108.38	104.91	112.95	103.19
" Base of tail	108.63	105.16	114.69	105.73
" Scapula-humeral joint	69.03	66.69	73.25	67.12
" Elbow (humeral-ulnar)	59.00	57.00	62.34	57.07
" Carpal joint	29.81	28.89	31.26	28.76
" Knee (patellar joint)	69.28	67.06	72.05	65.75
" Hock	40.25	38.96	42.01	38.35
Length Frontal eminence to base of tail	117.94	114.17	123.33	112.78
Depth of thorax	54.00	52.27	56.86	52.05
Length of shoulder	39.29	38.03	41.75	38.16
Width of shoulder	18.01	17.42	19.55	17.88
Width of thorax between humeral joints	30.60	29.62	32.27	29.68
Width thorax behind scapula	30.75	29.76	32.20	29.68
Width of lumbar vertebrae (loins)	28.50	27.58	30.63	27.72
Width pelvis betw. tuber coxae	37.91	36.69	40.16	36.52
Width pelvis betw. trochanter major	34.05	32.96	35.35	32.42
Length pelvis from tuber coxae to tuber ischii	38.60	37.37	40.97	37.44
Width outer ischial arch	20.75	20.08	22.11	20.09
Width inner ischial arch	10.34	10.00	10.72	9.70
Circumference of thorax	146.43	141.75	153.46	140.24
Circumference of carpal joint	24.90	22.16	26.01	23.74
Circumference of metacarpus	14.64	14.25	15.50	14.15
Circumference of hock	30.74	29.75	32.31	29.54
Circumference metatarsus	16.77	16.23	17.52	15.98
Length of head	38.61	37.37	39.93	36.52
Length of forehead	17.23	16.86	17.84	15.20
Width forehead at orbits	16.80	16.25	18.07	16.43
Width forehead at narrowest part	13.72	13.28	14.36	13.00
Width between facial crests	12.87	12.45	13.28	12.05
Length of ears	17.56	16.99	18.11	16.60
Width of ears	12.06	11.67	12.63	11.60
Circumference horn at base	12.00	11.44	12.73	11.36
Length of horn	12.10	11.64	13.35	12.27
Hornless or rudimentary stumps	29.26%		15.86%	
Weight	224.90 kg.**		263.40 kg.	

* 1 inch = 2.54 centimeters **1 lb. = .454 kilograms

This breed is parti-colored with black predominant in the body, appearing mainly on the rump, above the knees and above the hockjoint, ears, and around the eyes. Horns and hoofs are also dark as a rule. White is predominant in the region of the forehead, nose, dewlap, below the hocks and knees, and in the lower part of the tail. White can also be seen occasionally in the lower part of the chest, and may spread to the udder. The coloring in general may be compared to the Holstein Friesians, but the white areas along shoulders and pelvis are not as common as in the latter breed. Occasionally we come across an all black specimen as seen in Illustration 2. In smaller numbers, red and white native cattle are seen, but there is doubt whether they are of pure Arabian stock. These cattle are in greater demand by European colonists as they are better milk producers. They are probably grade cows which acquired their color from other than Arabian stock, such as the Beirut or other red-brown cattle.

ILLUSTRATION 1. Typical Specimen of an Arabian Cow

The hide and hair of the Arabian cow is coarse due to its life on pasture, but if well groomed and properly fed becomes as fine and soft as those of the most delicately bred cattle. During the height of the lactation period the udder is full and well developed, often covered with hair-growth; skin and hair often show black pigmentation. Neck has many fine folds; tail is long and slender.

Breeding. The Arabian cow is bred almost exclusively by the native fellahim who, with few exceptions, show little knowledge of the rules of selective breeding. She is a typical grazing animal and her whole development and productivity depends on the amount of water precipitation during the rainy winter season, the quality and fertility of the soil, and other climatic conditions. There are two pasture seasons, winter and summer. Winter pasture begins from early January and lasts until May, while the summer pasture extends through the dry season. During the first two months of the summer, up to the end of July, the grazing is still sufficient to sustain the animals without loss of flesh and weight, while from July to the beginning of December there is little in the fields besides durra stalks and grain stubble. Cattle lose weight in this period and just manage to survive until the beginning of new vegetation. No other Palestinian breed of cattle could survive under these difficult conditions, to which they have been habituated through many generations.

Wherever there is little danger of attack by marauding Bedouins and rustlers, owners of large herds prefer to leave their cattle in the fields day and night, and milk them out in the open. Owners of small herds, however, band together and drive their cattle out to pasture collectively under the care of a shepherd. After the calves are one year old they are kept with the grown stock.

During the winter when there is no excessive heat or bothersome flies, the cattle have good pasture and put on weight rapidly. During the summer cows are driven out around 3 a.m. and returned to their sheds at about 9 or 10 a.m. where

they remain until 2 or 3 p.m. because of the great heat in the middle of the day. At about 3 p.m. when the heat subsides, the cattle are driven out until sunset when they are again returned to their sheds for safety and milking. It should be understood that practically all Arabian cows are completely dry during the last half of the summer because calvings come during early winter, and poor pasture in the summer cuts down the lactation period.

native cattle, having been exposed for generations to the heavy tick infestation which exists throughout the country and which are carriers of piroplasmosis, anaplasmosis and theileria, have built up a certain resistance to these diseases to which imported cattle readily succumb.

The first rains of the season begin in November and, although precipitation is light at first, the steady drizzle penetrates the soil and starts a gradual new growth of grass. This sparseness of

ILLUSTRATION 2. Author Measuring Black Arabian Cow

Cattle left in the open graze mostly in the morning, evening, and at night, when they are unmolested by flies. During the hot hours in the middle of the day, they go to water, seek shelter, and rest. These cattle are rather temperamental, quarrelsome, hard to manage, and particularly wary of people in European dress. These small wiry animals can kick backwards and extend their hip joints like a bucking broncho.

Most Arabian cattle rely completely upon pasture, and have to store up enough nourishment during the winter to last them for nearly five months of very meagre summer pasture. These new vegetation does not permit sudden overloading, and allows the cattle to become gradually accustomed to increasingly better feed. By this time the emaciated Arabian cows have already gone through two-thirds of their gestation, the last third coinciding with the best pasture, when the pregnant cow can put on flesh and come into better condition for parturition, milk production, and new breeding.

Wherever possible cows are kept in sheds two or three days before calving, but most of the time they give birth in the open field. As calvings occur in the first part of the winter, at the time of good

vegetation, feeding of mother and calf is assured. The cow recuperates very quickly after calving. The ovaries are stimulated by the abundant vitamin E present in the new grass, the corpus luteum degenerates, the formed Graafian follicles rupture, and bulling begins three to six weeks after calving. The height of mating and conception is reached at about six to nine weeks after calving. This breeding process is regulated by physical and climatic conditions, and is repeated year after year without any change.

As a rule there is no supervision of mating, and nature takes care of selection and breeding. As in the case of wild animals, they are subject to the law of the preservation of the fittest, and natural selection eliminates the weakest and youngest bulls in the herd. As the bulls run freely in the herd, there is occasional inbreeding which is frowned upon by the fellah, but which he is powerless to prevent. The Arabian bull loses his potency during the height of the summer due to the excessive heat and deficient nourishment, and is unwilling to cover the cows. He lives under the same grazing conditions as the cows and uses up his fat reservoir accumulated during the rich pasture period, gradually losing weight and strength. However, with the beginning of the rainy season the bull begins to put on weight, gains strength, and arrives at his full potency with the height of the best grazing and breeding season.

The Arab does not pay enough attention to male stock in the belief that race and production characteristics are inherited predominantly through the female. It is, of course, well established that the use of selected sires can greatly improve the standard of a herd, and the fellah's ignorance of this fact is one of the chief reasons for the stagnation of native stock. Even the Bedouin, who devotes his life to the raising of Arabian horses, does not sufficiently appreciate the importance of the sire, and would rather part with his finest stallion than with his best brood mare, who indeed shelters under his tent like a member of his family.

ILLUSTRATION 3. Arab Plowing Near Nazareth

It is customary among the fellahim to castrate bulls after three or four breeding seasons, and butcher them while still young; therefore they have no way of determining the influence of the sire on the herd. The pelvis of the Arabian cow is very well formed and has enough room and elasticity to permit easy delivery. When mated with heavier breeds, such as the Beirut, or even the Friesian bull, there are surprisingly fewer dystocias than might be expected. Young bulls, after they are one year old, are added to the general herd. They sire as early as 15 months, or as late as 21

months, depending on whether they were born at the beginning of the pasture period or later. As a rule heifers become pregnant at the age of 18 to 21 months, and occasionally even when only one year old. These latter heifers, however, do not develop according to the standard, and are quite often eliminated from the herd. As the mating season is rather short, a proportionately large number of bulls are left with the herd, one mature bull and several yearlings to every 30 to 40 cows. Conception is between 70 percent to 80 percent, which is considered quite good as compared with other breeds in Palestine. The period of gestation is normal, about 9 months 10 days. The longevity of the Arabian cow is exceptional, some of them living over 26 years. The writer examined a cow of this breed in the colony of Wilhelma, which gave birth to 16 calves. However, cows are usually kept for breeding until they are about 12 years old and then butchered.

Raising the Calves. Immediately after birth the calf is allowed to remain with the mother which takes very good care of its offspring, often not allowing its own familiar herdsman to draw near. There are many cases of herdsmen being attacked and injured by the cow while trying to help with the young.

The calf is permitted to have colostrum ad libitum, and is left with the mother for a shorter or longer period, depending on the proximity of

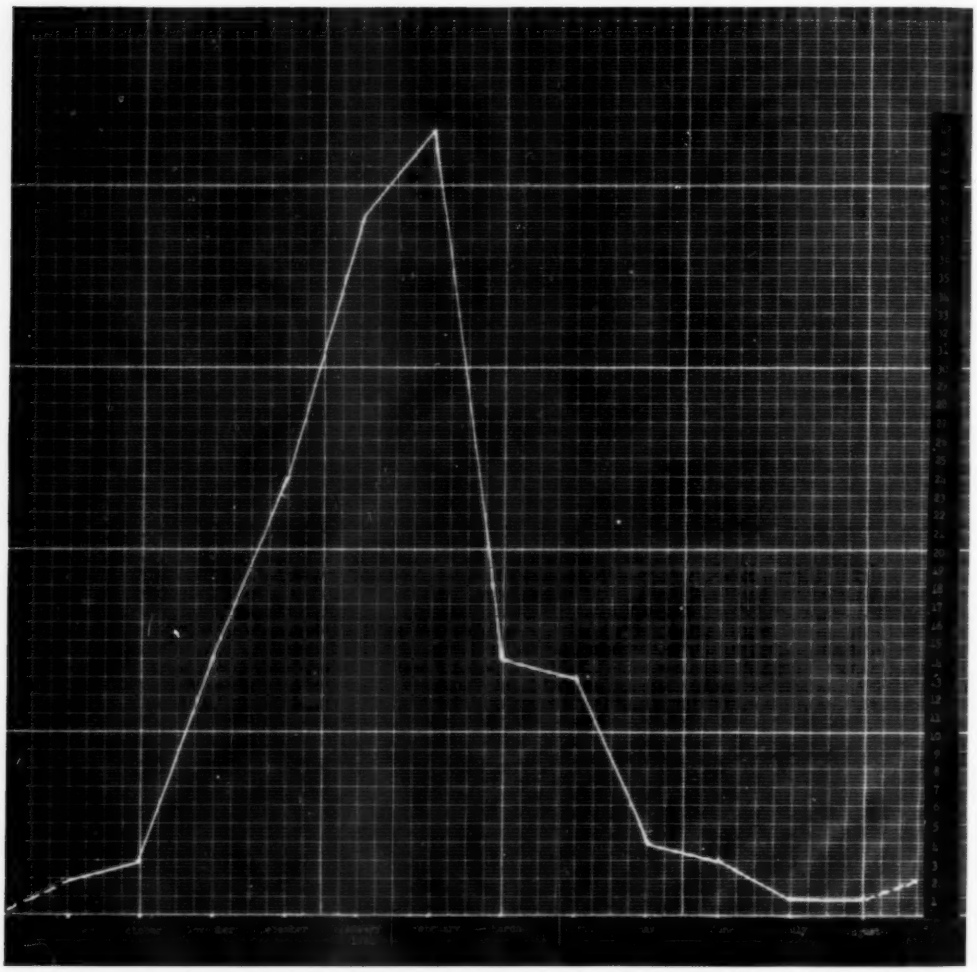

FIGURE 1. Calvings of 160 Arabian and Golan Cows

the milk market. Some fellahim will allow the full milk feeding for one week only, and then cut down on one quarter each week until the fourth week. The calf gets a small quantity of additional milk during the lactation period because the mother will hold back her milk unless the calf has started to nurse. Once the flow of milk begins, the calf can be pushed back to the designated quarter. Arabs who live far from the milk market, such as those inhabiting northern Galilee, allow the calves to remain with their mothers all the time, or for at least one month, since refrigeration and pasteurization are unknown to them. After the calves have taken as much as they wish, the cows are milked dry. The calves who remain with their mothers indefinitely during the lactation period and become gradually accustomed to pasture feeding, develop more rapidly and reach maturity much sooner than others. This is not the general pattern of the country, however, and on an average calves are only fed between 70 to 100 quarts of milk before they live exclusively on pasture. Milk which the calves consume to start each milking is not included in the above calculation.

Calves learn to graze after they are a few weeks old and either stay with their mothers or in separate calf herds. To prevent the calves from excessive nursing they are tied to their mother's neck with a rope. When the calves are six months old, the pasture starts to deteriorate and the young animals become gradually exposed to grazing conditions that become very pitiable. At the height of the summer when the pasture is most scant, the grown herd and even the calves are sometimes fed with Arabian "tybben" which is simply ground and broken-up straw and chaff. Only occasionally is durra or sesam pulp added to tybben and given to the calves. Durra, which the fellah grows for food, reaches a height about equal to that of our Golden Cross Bantam corn. It bears fruit only at the tips, which are harvested with a sickle, leaving the stalks standing in the field. By the end of the summer many calves are seen with greatly enlarged and pendulant abdomens, and with matted hair full of parasites, lice and ticks. These emaciated calves, looking like mere skeletons await the coming winter. The first rains clean away their accumulated dirt and parasites, and grazing on the young grass gives them a new lease on life. After one year, the new generation, together with the older more mature animals in the herd, must again endure a near starvation diet for five months in order to survive.

Arabian cattle are bred for work, beef, and milk production, but do not excel in any of these qualities. However, inasmuch as the fellah has little expense in raising his cattle, the herd is profitable to him.

Bull calves destined for work are castrated rather late, when they are between 1 and 2 years old, because the fellah likes to utilize them for one breeding season and because he claims that the animals develop into much stronger oxen. However, Arabian oxen cannot compare in strength with those of other breeds raised for work, though they are very hardy and are adequate for the light Arabian plow which cannot turn the soil over, but is capable of breaking it up to a depth of 4 or 5 inches (Illustration 3).

The harness used by the fellah, although quite primitive, is sufficient for his light plow. It consists of a double withers yoke of wood. A horizontal beam or pole is placed in front of the withers, at the center of which two cross-rods protrude vertically, separating the two plow animals. The lower half of each vertical rod is connected to each end of the horizontal pole by a rope embracing the neck of the animal. The middle of the horizontal pole is connected to the wooden shaft of the plow by means of a yoke nail or yoke wedge and fastened with ropes, forming the center of the pulling attachment. Harnessed in this fashion the animals have free hind quarters and are able to leave the furrow. The animals are guided and prodded from behind by a long wooden pole, often with a steel point, which is used by the fellah not only for guiding, but also for encouraging the animals to harder work. The fellah does not hesitate to team a cow and an ox together, or even a donkey and a cow, or a donkey and an ox (Illustration 3).

The weight of slaughtered cattle, as well as beef quality, depends on the length of time the animals have fed on good pasture. As indicated before, animals lose weight during the summer months, but if kept over until the late winter or early summer they produce beef of good quality. Dressed weight of poor quality beef is 30 to 40 percent of the live weight, while dressed weight of cattle butchered in early summer is 40 to 50 percent of live weight. Average weight of the Arabian cow is 224.9 kgs., and ranges from 200 to 260 kgs.

Milk production. From the diagram on 160 calvings given here (Figure 1) we see that most calves are born during the month of February, and as the Arabian cow reaches the peak of its milk production one month after calving, during the best

grazing period, the month of March is associated with the greatest milk production. When the cow becomes pregnant and "feels" its calf, milk production falls off rapidly. Unfortunately, the fellahim do not keep milk records, but the writer was able to compute figures from 38 cows which were kept by Jewish settlers under conditions similar to those of herds owned by Arab fellahim. Taking into consideration these recorded figures and information from native cattle owners, he computed an average yearly milk production of 779.5 quarts during a lactation period of 242 days. However, the herds which rely exclusively on pasture have a lactation period of 160 to 210 days with a variable milk production of 600 to 850 quarts per annum. The record for an Arabian cow was made in the Jewish Cooperative of Tel Josef where a cow produced 1,292 quarts of milk in 270 days, with a maximum production of 10 quarts per day. Inasmuch as Arabian cattle respond easily to better feeding, there is great variation in the milk production of individual cows, and it would seem that milk production could be raised to an average of 1,500 quarts a year through careful breeding and selection and better living conditions. We have an analagous condition in the Swedish Fjel cow which is similar in appearance to the Arabian cow in many respects, and whose milk production was raised from 1,300 quarts to 2,104 quarts by systematic breeding to selected bulls.

Butterfat. As there were no records of Arabian milk butterfat available the author was the first to undertake milk analyses. The tests were made in the years of 1923 and 1924 during the summer, at the time of poor pasture, and in the winter when pasture was good. It was endeavored to analyse morning, noon, and evening milk wherever there were three daily milkings, and the tests were spread out throughout the lactation period in order to get a more reliable average. Computations were made from 213 analyses on 80 cows, and show an average of 4.482 percent butterfat per cow per year. During the winter, the time of high milk production, the butterfat average dropped to 4.325 percent. It rose to 4.86 percent when the cows were at the end of the lactation period in the dry summer months. The yearly average of morning milk before pasture was 4.75 percent and evening milk after pasture, 3.805 percent.

The average of 4.482 percent of butterfat is quite high compared with other breeds of Palestine, but there is the probability that this figure will go down if milk production is raised above the average of 779.5 quarts per cow. Although butterfat content is inherited independently from milk productivity, there seems to be some correlation between the two factors. Milk production could be raised through feeding concentrated foods such as linseed, cocos, and sesam cakes, or meal rich in protein and fat, but inasmuch as butterfat content does not seem to be influenced by better feeding, the same percentage of 4.482 could be retained only by a program of regular milk analyses and selective breeding.

Milking. Arabian cows in general are milked twice daily. In the few cases when they are raised for milk production only, they are kept in barns and milked three times daily. The fellah who keeps his cows in an enclosure at night, milks them at about 2 or 3 in the morning before they are let out to pasture, and again at sunset when they return from the fields. The evening yield is the highest. Before each milking the calf is brought to the mother for nursing from all four quarters otherwise she would hold back her milk indefinitely. This is, of course, one of the additional reasons for low milk production, especially when a calf happens to be sick or dies. In the latter event, the fellah skins the calf, stuffs it with straw, and brings it to the mother before each milking. The cow licks the stuffed calf, and if the milker is experienced and not a stranger, she releases her milk.

The teats of the Arabian cow are rather small and can be embraced with only two fingers. Only wet stripping is known for milking. Sanitary conditions of animals and milkers are very bad and it is not surprising that the milk is often dirty and contaminated.

Another reason for lowered milk production is the common practice of milking both quarters of the same gland at one time, instead of one quarter of each gland. Additional milk is being produced during the time of milking, and the gland which is still full and not being milked has no room for more milk production. Some cows are such good mothers that they will withhold milk until the calf is brought in a second time at one milking. Most of the milking is done by women in a squatting position, without the use of a milking stool, and after a thorough stripping, the calf is again returned to the mother. It is in place to mention here a milking method which was used by the half-Bedouin tribe called Hamdam, which lived in the region of Zichron Jacob. This tribe had a fairly large herd which excelled not only because

of its high milk production, but also on account of the wild character of its cattle. The Bedouin women used to approach the cows, which only had close contact with people during the lactation period, while singing, and they continued to chant all during the process of milking. The cows seemed to become tamed, and in a way hypnotized by the chanting voices, and gave their milk freely. Perhaps this tribe can claim the distinction of originating the "contented cow" before the "Carnation" breeders.

Milk Byproducts. As milk production is not spread out during the entire year, there is an oversupply at the height of the season, and the fellah converts some of his milk into dairy products, such as cheese, lebben, *kishik*, and butter.

Lebben is fermented sour milk, and tastes like yoghurt. In order to make lebben the fellah heats the milk to a point at which his finger, which he uses as a thermometer, can stand the heat. The milk is then cooled off to lukewarm temperature, covered with a cloth, and brought to fermentation by the addition of a small quantity of old lebben. It takes 5 to 10 hours before the milk is properly fermented.

Kishik is a cheese made out of lebben. The lebben is placed into a bag and hung so that the liquid is drained out. The residue is made into cakes and exposed to the sun for drying. This kishik is then placed in olive oil and can be preserved for many months.

Pot cheese is made from fresh milk to which is added a small amount of rennin to produce curdling. The curdled milk is then put into a porous container to draw off the liquid, and the curd is shaped into cakes, salted and dried. This cheese is much more durable than European cottage or pot cheese, but is too salty for European or American taste.

Butter preparation is primitive and original. Even old-fashioned butter tubs are unknown to the fellah. The milk is placed in water-proof goatskin bags which are hung up and beaten with rods or sticks until the butterfat becomes separated. Butter is also made by placing a tightly closed goatskin bag on the ground and then rolling it back and forth. The Bedouin is the most original in his method of making butter. He fills his goatskin bags half full of milk, places them over his saddle, and gives an exhibition of riding, a "fantasia," which he enjoys until the butter is separated.

These primitive methods, of course, produced less butter, but they are quite practical under the circumstances. As there is no refrigeration, the butter is often brought to a boil to preserve it somewhat longer.

Dairy products of European settlers bring higher prices because they are made under better standards of sanitation.

Golan Cattle. Golan cattle are closely related to the Arabian breed and resemble them in practically every respect. They are slightly larger, of a stronger constitution, and have more white on the head and dewlap. The hoofs are strong, rounded, well-formed, and dark. Dewclaws are long and narrow. Like the Arabian cow, the Golan is of the brachyceros type and shows a high prominence between the horns which is covered with a clump of hair. The horns are short (12.7 cm.) with shallow sockets, and a large percentage (15.68) are hornless or have rudimentary horns (see Table 1). The measurements of 73 Golan cows given also show that while the absolute (actual) size of all dimensions are somewhat larger than the Arabian breed, the relative figures show a bony formation nearly identical in both breeds. However, the slightly larger pelvis and size of the Golan give a better basis for crossing with larger breeds.

The population of Golan is in large number Mohammedan Circassians. These people give better attention to their herds than the Arab fellah, and part very unwillingly with their stock. It is claimed that Golan cows, in their own habitat, produce between 1000 to 1200 quarts of milk annually, which may be due to better pasture and living conditions. However, when Golans are brought to West Jordania where they live under the same conditions as the Arabian cow, their milk production goes down considerably, as can be substantiated by the record of 9 Golan cows imported from Golan to Tel Josef in the Valley of Israel. The first year these cows gave an average of 654 quarts of milk during a lactation period of 208 days, with the highest milk production in that group reaching 875 quarts in 205 days. This low yield may in part be attributed to change of habitat and the acclimitization process, and also to the fact that the cows were not accustomed to their new milkers.

The average weight of the Golan cow is 263.4 kg. as compared with the Arabian 224.9 kg. and therefore the heavier Golan oxen are preferred for plowing.

In general it would seem that the improved characteristics of Golan cattle are acquired rather than inherited, as they tend to revert to the average of the Palestinian native Arabian cattle when they are subjected to the same conditions.[9]

Modern methods of farming are gradually being introduced in the Middle East, and in the Israeli part of Palestine where intensive agriculture is practised, the Arabian and Golan cattle are becoming rapidly extinct through crossbreeding or replacement by high producing European breeds.

However in the Arab countries bordering on Israel, especially Trans-Jordan, where herds must rely almost exclusively on pasture for their survival, the Arabian and Golan cattle have a definite place in the agricultural economy. These native breeds, indigenous to the area for thousands of years, have acquired a hardiness and resistance to sub-tropical diseases which cannot be matched by any other breed, and these characteristics can be retained at the same time as milk production is increased through improved pasture, selective breeding, and better sanitation.

[9] On a visit to Palestine in 1947 the author checked prevailing conditions of native Arabian and Golan cattle, and is satisfied that the figures and conclusions given here remain substantially correct for the present day.

EARLY AGRICULTURE IN WESTERN CANADA IN RELATION TO CLIMATIC STABILITY

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Clearing, Cultivation, and Climate. Among various suggestions which have been almost desperately brought forward in recent years to account for what might appear to be changes of weather, seasons, etc., in Western Canada, so fundamental that ordinary explanations are deemed inadequate, is one that "the climate is changing." In so far as it seems possible to grasp the meaning of many of those who advance the idea, they appear to imply some intangible but deep and basic readjustment which is beyond relation to any *visible* physical causes.

For example, to assert—or even to prove—that owing to clearing of woods and scrublands on a large territorial scale, certain regions now experience a colder winter or a windier summer than was formerly characteristic of those areas in their earlier more sheltered condition cannot properly be adduced as evidence for a change of *climate*, strictly so called. Such climatic phenomena have been commonplace in similar topographical environments from the earliest beginnings of our historical knowledge of the North American continent. More serious, beyond question, because of economic consequences more far-reaching than those following from such manifestations as have been mentioned, is the possibility of an extreme or prolonged (if not permanent) dessication of the soil, such as to reduce the areas affected to mere deserts.

The immediate effect of a windier summer is largely to increase discomfort. A colder winter does the same. But in a farming and stock-raising community the latter also increases the amount of food necessary to maintain livestock and bring it to marketable condition. This introduces secondary economic consequences in the form of increased costs in the production of beef and pork, although these merely become the same, broadly, that dwellers in the colder environments have had to meet from the beginning. So long as the "climatic changes" do not preclude the growing of this additional necessary food, the difference is very largely one of labor, and the economic consequences to a man farming his own land scarcely become acute. But if the same causes and effects carry their consequences to the point where it becomes difficult or impossible to produce the increased quantity of foodstuffs required, and perhaps not even the previous normal sufficiency, the situation assumes a more serious aspect.

One hears a great deal, including much from men who neither possess, nor pretend to, the qualifications of scientists, about the influence on climate of the reduction of large areas of land to cultivation, particularly forest or heavy scrubland.

Even where the exponent was not a professed "booster" or propagandist, this influence has been almost automatically assumed to be wholly favorable to agriculture. This may perhaps actually be the case. The immediate results in warming the soil and hence tending to postpone early frosts, certainly appear frequently to be such. On the other hand, the same clearing operations on a large scale may even make summer frosts a greater danger. It has been observed in the relatively cooler areas of central and northern Alberta that a strong northwest wind sweeping over a wide territory of what is now almost open country in the critical days of late August will often considerably reduce the daytime temperature.[1] Under such conditions a still night about the full of the moon (when prairie skies are commonly clearer) frequently results in frost.

One may further suggest that if our planet is open to any influences whatever whose trend is to modify a Medes-and-Persians conception of fixed and immutable climatic principles—or sequences—then such influences may quite conceivably operate spontaneously or at least independently of identifiable human agency, and need not necessarily be what we define as beneficial. It may also be true that climatic modifications occurring within closely-observed historical eras, and following upon the conversion of large areas to cultivation with sufficient uniformity to be reasonably attributable to that cause, are by no means wholly favorable to the continuance of the agricultural operations that have apparently caused them. Our frosts mentioned above may be a case in point.

A radio speaker in Alberta commented some years ago on the possibility of adverse results from the drainage of large marshy tracts in that province. One must in reason suppose that such areas constituted an influence in the *topographical* causes of climate. If so, their "remodeling" into something totally different may quite possibly add some disturbing factor; or remove some force which contributed to make the region what it was when it first attracted the attention of agriculturists.

Some curious facts in this field were noted by certain classical observers, including Pliny:

> The vicinity of Larissa in Thessaly . . . was a district suitable to olive culture; but a lake was drained, and the olives ceased to bear. Near the town of Ænos a channel was cut for the river Hebrus, and for the first time within the memory of man the vines were frostbitten. About Philippi the country was drained and the climate began to alter. Thrace, he says, is fruitful in corn [*i.e.* wheat] because it is cold; Africa and Egypt are equally fruitful because they are hot. Chalcia is an island so fertile that a fresh crop can be sown after barley harvest and ripened as early as the crop on the wheat land. In Venafrium the gravel soil is best for olive culture; but in Baetica, a rich soil; Pacumian vines are ripened upon the rock; and Cæcuban vines upon lands irrigated from the Pontine Marshes. . .[2]

Peculiarities of this character seem to point to the hidden workings of subtle physical agencies; even in lands which, unlike the vast interior of the North American continent, had the more stabilizing influence of a great sea much nearer at hand.

It has been suggested that within the last quarter of the nineteenth century climatic phenomena presented themselves in the northerly "Fertile Belt" of Western Canada—in central Alberta, to be precise—pointing to a condition of excessive aridity during a cycle of some apparent continuance, and fully as acute as those conditions now visible or to be anticipated as a result of reckless

[1] Henry Youle Hind, at the Forks of the Saskatchewan, August 1858: "The temperature of the South Branch was 67°, of the North Branch, 62°; an important difference at this season of the year. It is perhaps a fair standard by which to estimate the climate character of the regions of country through which these rivers flow, in relation to agriculture . . ." Hind, *Report on the Assiniboine and Saskatchewan Exploring Expedition of 1858* (Toronto, 1859), 65. See report of G. M. Dawson in John Macoun, *Manitoba and the Great North-West* (Guelph, Ontario, 1882), 132.

[2] Plinius, *Historia Natura*, lib. xvii; cited by R. M. Garnier, *History of the English Landed Interest* (London, 1908), 1:31. See N. S. Shaler, *Nature and Man in America* (New York, 1891, 1900), 23, on a project (*about* 1890; and which has recently been mooted again) for flooding certain depressed areas in the Sahara Desert; the one objection has been that it might produce climatic changes in now fertile Mediterranean lands. Ellsworth Huntington has devoted much attention to this subject. See his essay, "Changes of Climate and History," *American Historical Review*, 18:213–232 (1912); also his *Civilization and Climate*, and other numerous writings. A foremost climatologist remarks: "The possibility of changes of this nature brought about by human activities has to be remembered in all discussions of the vexed question of 'desiccation' in historic times; in fact a passage in Plato's 'Critias' suggests that the decadence of Greece may have been due to such causes . . ." C. E. P. Brooks, *Climate Through the Ages* (London, 1926), 194–195; *cf.* 354, also 321–418 at large. See also "Climate and Climatology," *Encyclopaedia Britannica* (11th and 14th ed.).

"wheat-mining" methods of cultivation.[3] At this time agriculture was still too scanty and sporadic to be reasonably considered as the cause. The first grain elevator between Calgary and Edmonton dates only from almost the end of the suggested cycle.[4] From another angle, the meteorological data of Professor John Macoun, (*re* 1872 *seq.*), to which I have elsewhere drawn attention[5] are so completely irreconcilable with later history and common knowledge, both in respect of alleged factual evidence and of the conclusions to be formulated therefrom, as to arouse if not to justify a suspicion that some drastic change has actually occurred during the last fourscore years. To attempt in outline some investigation of this question from the viewpoint of agricultural history is the purpose of the present essay.

It is not certain to just what extent historical notices of early cultivation in this or that locality can in themselves be considered authoritative testimony on such a question, valuable as they are. Of these there have been two or three outstanding summaries, in which a large number of early records have been collected.[6] What should have been actually the most definitive in this field, those derived or derivable from Hudson's Bay Company documental sources, are vitiated to a considerable degree by the mutually recriminatory statements resulting from Sir George Simpson's maladroit shufflings before the Select Committee of 1857 and the resentful contradictions of his opponents.[7] We have to remember also, even where there is no ground for impugning the good faith of a witness, that almost all of the independent testimony from Simpson's time onward (1820 *seq.*) comes from visitors who were birds of passage. The men on the ground did not dare to speak.[8] These visiting observers could only in the nature of things describe what they saw *in that year*. Whether the existing climatic conditions in the Fertile Belt are or are not what they were a century ago, their observed variations during the last fifty-seven years within the present writer's own knowledge render generalization based upon the seasonal phenomena of any single year virtually worthless. For this reason it seemed more reliable to concentrate as much as possible upon the *dates* of agricultural operations in their recorded localities, passing as briefly as possible over general allusions to such. It is of course regrettable that in so many instances our historical notices are meagre. We must bear in mind, however, that the active participants were primarily neither "inaugurating a policy" nor greatly concerned about recording results. First and foremost, they were either diversifying a monotonous meat diet; or, more basically still,

[3] See F. J. Lewis, Eleanor S. Dowding, and E. H. Moss, "The Vegetation of Alberta," *Journal of Ecology*, London, vols. 14, 16, 17, 20 (1926, 1928, 1929, 1932); note particularly 20: 390–392, 405.

[4] The cycle is given as 1890–1898. I observed that "first elevator" in process of erection at Red Deer, Alberta, Oct. 30, 1897.

[5] F. G. Roe, "Early Opinions on the 'Fertile Belt' of Western Canada," *Canadian Historical Review* 17: 131–149 (1946).

[6] See particularly E. H. Oliver, *The Canadian North-West* (Ottawa, 1914–1915), making extensive use of original documents; "The Beginnings of Agriculture in Saskatchewan," Royal Society of Canada, *Transactions*, Sec. 2: 1–32 (1935); also W. L. Morton, "Agriculture in the Red River Colony," *Canadian Historical Review*, 30: 305–321 (1949). A. S. Morton's monumental *History of the Canadian West to 1870–71* (Toronto, 1939) gives much, but is far less full on this subject—and regrettably less candid—than could be wished. The present paper discusses this.

[7] "The examination of Sir George Simpson was long and searching. Often it makes amusing reading . . ." (A. S. Morton, *Canadian West*, 820). It assuredly does; perhaps not always in Morton's sense. The latter implies that Simpson confounded his critics in every particular. Simpson's verbal sword-play was truly amazing; he reeked with shrewdness, but exhibited little wisdom. In everyday parlance, he was much "too smart." The man who could pour out endless masses of detail and floods of statistics *extempore*, and whose iron rule of his subordinates was notorious, "couldn't remember," or asserted that this or that "was done without his consent" when confronted with inconvenient facts which could not be explained away. How could Simpson suppose that such shufflings could deceive such men as Gladstone, Roebuck or Lord John Russell! His agricultural evidence is described by a very moderate critic as "confused and evasive." (W. L. Morton, *Canadian Historical Review*, 30: 308 (1949)). See also J. S. Galbraith, "The Hudson's Bay Company Under Fire," (*ibid.*, 328–329). E. H. Oliver is more severe on "the pompous little governor's" tergiversations; quite justly so (Royal Society of Canada, *Transactions*, Sec. 2: 10 [1935]).

[8] Sir Edward Watkin, president of the Grand Trunk Railway, who was working for its transcontinental extension, 1863 (A. S. Morton, *Canadian West*, 793, 838) wrote: "As regards knowledge of the country to be traversed, the factors of the Hudson's Bay Company knew every fact worth divulging, but they were afraid to speak . . ." (Watkin, *Canada and the States* [London, 1887], 64).

they were trying to raise something to eat. Perhaps our most convenient approach will be chronological.

Early Cultivation in the Hudson Bay and Central Forest Area. The desirability of vegetable foodstuffs was recognized by the Hudson's Bay Company, both the London Committee and the men on the ground, from very early times. Governor Nixon's *Report* of 1682 speaks of his intention to see "whether corn [wheat] would growe," and requests the Committee to send him some "Buc wheat" for experimental purposes, in addition to garden seeds.[9] Among the outgoing supplies the following April (1683), are included "hempe seed," also "turnip, lettice, radish, spinage, colworts, and mustard seed, valued at £1.11.0;" together with "2 bushells of buck wheate" and a "kilderkin of virginia wheate." Among new employees hired for the same season is "Thomas Stead, Gardner," for four years; but whether engaged in that particular capacity is not stated.[10] Evidently some of these projects proved practical. A later historian states that garden stuffs were being grown at York Factory around 1730.[11]

So many wild statements were flung about in the Dobbs controversy of 1749 that great caution is necessary in drawing any inferences. Dobbs and his associates said:

> No settlements have been made, though barley, oats, and rye ripen at Moose Fort and wheat survives the winter there... The most Part of the Countries around the Bay are in temperate Climates, great Part of it proper for Tillage, and Cattle may be bred and kept in all Parts of it ... The Countries South and West of the Bay are equally temperate within Land as in the Continent of Europe in the same Latitudes...[12]

Richard White, an ex-employee of the Hudson's Bay Company, stated before the Select Committee of the House of Commons (1749) that "he had seen barley in the ear in August at Moose Fort...." John Hayter, ex-employee at Albany, had been as far as Henley House, 150 or 200 miles up the Albany River. He had seen large tracts of land which would bear corn (wheat?) if cultivated, the climate being much warmer inland. Joseph Robson implied that nothing but the will was lacking. "It would be a great advantage to the Company to grow wheat at York Fort, but many things were not done which would be of great advantage...."[13]

The two last are purely *ex parte* assertions. White's—coming from an assailant of the Company—disposes of the contention (even if Dobbs himself had not done so already) that the Company "allowed nothing to be grown but a turnip garden," certainly at least as a literal truth, whatever their broad policy may have been at this time. I do not know the actual potentialities or limits of the region at the present time; but nobody associates it with agriculture to my knowledge.

During the same general period, the French explorers and traders were utilizing the country to some extent. La Vérendrye, at his post of Fort St. Charles, on the Lake of the Woods, was cultivating the soil in 1733, and, relatively at least, to some extent. For together with the local resources from wild rice, he anticipated being independent of any supplies from Montreal; he was even able to assist some starving Indians with the peas and 'unripened corn' which he had grown.[14]

Early Cultivation on the Prairie and Northern Lands, 1778–1857. The earliest notice I have found relative to the farther West is of Peter Pond. He was the first to cultivate a field or garden in the Northland, along the lower Athabaska River, which he reached in 1778. Alexander Mackenzie said in 1787 that Pond "had formed as fine a kitchen garden as ever I saw in Canada," which of course at that time meant modern Quebec or Ontario.[15] Stimulated no doubt by this example,

> in the summer of 1788, a small spot was cleared by the Fur Traders at the "old establishment" on Peace River, which was situated on a bank thirty feet above the level of the stream, and was sown with turnips, carrots, and parsnips. The first grew to a large size and the

[9] *Minutes of the Hudson's Bay Company, 1679–1682* (Champlain Society; Hudson's Bay Record Society, 1945), 247, 251.

[10] *Ibid., 1682–1684* (1946), 6, 99, 101, 295, 313. A kilderkin is a cask of 16 or 18 gallons capacity.

[11] A. S. Morton, *Canadian West*, 149, quoting Dobbs writing in 1749: "All the [H. B.] Company would allow them to grow was a turnip garden." *Cf. ibid.*, 638.

[12] *Ibid.*, 224. Dobbs contradicts himself here. Moose Factory lies 51°N; the latitude of Dieppe and the Somme, roughly.

[13] Moose Factory is at the southern end of Hudson Bay (James Bay), in 51°N. Albany River enters the Bay about 52°N, on an east and west course.

[14] A. S. Morton, *Canadian West*, 176, 180. See also, Alexander Mackenzie, *Voyages ... in the Years 1789 and 1793* (to which is prefixed *The General History of the Fur Trade*) (Philadelphia, 1802), lvii, lxxiii.

[15] *Ibid.*, 328, lxxxvii, 400, etc.

others thrived well. Potates were also successful, but cabbages, for want of care, failed. . .[16]

While this makes no mention of grains, it may be said broadly that a season when potatoes are successfully grown would almost certainly ripen barley; and a gardener of any competence whatever would speedily draw his own conclusions on climate at large in his own locality. Edward Umfreville evidently did so in these very years. He speaks of the fertility of the Saskatchewan Valley below Carlton House, about 1785, for vegetables, barley, and "Indian corn," of all things![17]

Whatever might be the favored policy in London, the Hudson's Bay Company men in the west followed their Nor-Wester competitors in this respect. Peter Fidler's gardens at Green Lake on the Methy Portage route from the Saskatchewan to the Clearwater, and at Nottingham House on Lake Athabaska, are conspicuous in the troubled "period of violence" between the rival fur companies; for the Nor-Westers destroyed them more than once.[18]

During the same years Alexander Henry, the younger, furnishes some useful information, including dates. He records the sowing of garden stuff at his post on the Red River, near the (later) International Boundary, May 7–16, 1803; also the harvesting of the produce.[19] He also gives further references for the following year, 1804. They sowed their gardens April 26–30, May 4, 10; and again had a reasonably good season.[20] Henry had a garden at Portage la Prairie (the portage for Lake Manitoba, 55 miles west of Winnipeg up the Assiniboine River) in 1806.[21] In 1808, they sowed about May 17, and on June 15 their garden was ruined by "locusts" (grasshoppers).[22] Allowing for seasonal variations, these dates are much the same as those of a century later.

In the same general period Henry also mentions garden and field crops along the North Saskatchewan Valley, and supplies a few dates. Writing at Fort Vermilion (near the modern Vermilion, Alberta), he notes, October 5, 1809: "I set a party gathering turnips and potatoes, as we had a frost last night, and ice in the small ponds. . . ."[23] Surely this could not have been their first frost that season! The following year he writes, August 26, 1810: "We have had hard frost every night since the 23rd. . . ." That season nothing matured with him.[24] Yet he mentions barley at "Old" Fort Augustus (not the present Edmonton; twenty miles lower down the Saskatchewan, near the Sturgeon Forks) on September 3, 1810, without any allusion to frost.[25] Such localization of early frosts is a common feature in any era. The date given is rather late for barley if it was (as seems probable) the staple grain crop. Barley now is very frequently late, since few farmers sow it until longer-growing crops are safely in.

The decade 1810–1820 brings wheat specifically into the picture, and the history of the Selkirk settlers at Red River furnishes some vivid details. Among other instructions Selkirk advised their Governor, Miles Macdonell, that he could procure from Brandon House (near modern Brandon, Manitoba) "seed potatoes and perhaps some seed grain. . . ." This however is not definitely stated to be wheat.[26] It is quite clear that wheat was being grown by the North-West Company at Fort Alexander (Bas de la Riviére Ouinipique = Winnipeg) before the Selkirk contingent arrived in 1812. For they were in a position to sell them a "small quantity,"[27] specified more precisely by E. H. Oliver as "four quarts" sown by one individual, from which he reaped twelve and one-half bushels.[28] If these figures were correctly given, the fertility of the Red River region was thereby established beyond question, even after making allowance for a virgin soil, doubtless richly manured by ages of buffalo contact.[29] For one gallon (four

[16] Henry Youle Hind, *British-American Magazine*, 1: 171 (1863).

[17] E. Umfreville, *The Present State of Hudson's Bay* (London, 1790), 151–152.

[18] A. S. Morton, *Canadian West*, 519.

[19] E. Coues (ed.), *Henry Thompson Journals* (New York, 1897), 1: 211–212, 228.

[20] *Ibid.*, 1: 242–244, 252.

[21] *Ibid.*, 1: 291.

[22] *Ibid.*, 1: 430.

[23] *Ibid.*, 2: 549.

[24] *Ibid.*, 2: 621. Note the date, Aug. 26, 1810. As I was writing the above, Aug. 27, 1950, a frost was reported in the splendid Red Deer district of Alberta on the same date.

[25] *Ibid.*, 2: 566, 623. The two places are about 100 miles apart.

[26] A. S. Morton, *Canadian West*, 539.

[27] G. Bryce, *Remarkable History of the Hudson's Bay Company* (Toronto, 1904), 211.

[28] Oliver (Royal Society of Canada, *Transactions*, 3) has the four quarts sown and harvested in 1813.

[29] See on this, F. G. Roe, *North American Buffalo* (Toronto, 1951), 384, 497, 831. There can be little

quarts) constitutes from one-twelfth to one-sixteenth of the usual sowing of wheat per acre (1½ to 2 bushels). In other words such a return would equal from 150 to 200 bushels per acre!

Apparently this season could only have been 1814. For the very first wheat sown after the arrival of Selkirk's settlers was "twelve gallons" of winter wheat, sown by Miles Macdonell himself with a hoe. This proved a failure, in a region where winter wheat cannot be grown successfully. The spring-sown corn, wheat, and barley of 1813 also failed because of drought. These again had been planted with the hoe in the absence of sufficient plows (which did not make their appearance in the colony until 1823). Potatoes, turnips, and buckwheat were also put in; with what results is not definitely stated.[30] Whatever assistance these may have furnished to the colonists, they were compelled to move south to Pembina for the second consecutive winter to be nearer to the buffalo.[31] Somewhat curiously, however, the sowing of wheat for 1814 is given by A. S. Morton as "four *kegs*," in addition to seven of barley, five or six of oats, together with Indian corn, buckwheat, and nearly 300 kegs of potatoes. These appear to have done much better; green peas were eaten July 1. Yet however good the crops may have been, the quantity was insufficient, and the colonists again wintered at Pembina.[32] The seed wheat for the 1814 crop, like that of the previous year, was again obtained from Fort Alexander, or so it would seem.[33] This indicates a wheat-raising practice at that point which had passed beyond the initial experimental stage. In Red River itself, wheat-growing was lost for the next two seasons in the strife between the Selkirk settlers and the Nor-Westers (1815–1816).

Alexander Ross furnishes some interesting particulars on the fertility of the soil in the Settlement area, 1817–1820.[34] Their own brief experience must have settled any doubt in the settlers' minds concerning fertility *per se*. The troubles of the next few years arose principally from the grasshopper plague. Yet amid everything, grasshoppers, drought, frost, and windstorms, they contrived to save enough in these years for seed.[35]

The decade 1820–30 yields a considerable and widely-varied mass of testimony. D. W. Harmon expressed the opinion, about 1819, that the "Sauteux [Saulteaux—Plains Ojibwa] were becoming agriculturists."[36] Their lands lay west of Lake Winnipeg and south of the Cumberland House region, where in 1819 buffalo were "not found."[37] At Cumberland House itself (Saskatchewan River, 54° N, 102°30′ W), Alexander Henry had noted as far back as 1808 that "Barley grows to perfection; potatoes and all kinds of kitchen stuff are raised. . . ."[38] In August 1820, George Simpson, then (supposedly) nothing more than a junior officer newly arrived, whom others besides W. F. Wentzel and Simon McGillivray thought would be easily handled,[39] was at Cumberland House on his initial trip up-country. He wrote thus: "This . . . is capable of being made an excellent Farm as the soil is fertile; Mr. Williams has made

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doubt in my opinion that the normally huge yields of the first two years on most prairie soils, which have given rise to the legendary "inexhaustible fertility," owe much to this cause.

[30] A. S. Morton, *Canadian West*, 548, 553; Oliver, Royal Society of Canada, *Transactions*, 3.

[31] A. S. Morton, *Canadian West*, 546, 555; Beckles Willson, *The Great Company*, 395; Bryce, *Remarkable History*, 212.

[32] A. S. Morton, *Canadian West*, 565, 568. Four *kegs* would reduce the resultant yield to somewhat more credible and acceptable dimensions.

[33] A comparison of Oliver (Royal Society of Canada, *Transactions*, 3) with A. S. Morton (*Canadian West*, 555–569) and W. L. Morton (*Canadian Historical Review*, 30: 311–312 [1949]) leaves this as the only probable conclusion.

[34] Alexander Ross, *Red River Settlement* (London, 1856), 45, 109–114. We have a contemporary description, as it struck Governor Andrew Bulger, writing to Selkirk's executor, Andrew Colvile, July 25, 1822: ". . . one of the most miserable countries on the face of the earth—, for such, at present, is the Red River . . ." (Oliver, *Canadian North-West*, 1: 224).

[35] See W. L. Morton, *Canadian Historical Review*, 30: 312 (1949).

[36] D. W. Harmon, *A Journal of Voyages and Travels in the Interior of North America* (New York, 1922), 288.

[37] Sir John Franklin, *Narrative of a Journey to the . . . Polar Sea* (Everyman's Library, New York, 1910), 89, 176.

[38] Coues, *Henry Thompson Journals*, 2: 476.

[39] For Simon McGillivray, A. S. Morton, *Canadian West*, 613–616. Wentzel wrote: "Mr. Simpson, a gentleman from England, last spring, superintends their business. His being a stranger and reputed a gentlemanly man, will not create much alarm, nor do I presume him formidable as an Indian trader . . ." Letters, in Masson, *Les Bourgeois de la Compagnie du Nord-Ouest* (Quebec, 1889–1890), 1: 140. Simpson had written to Wentzel rather civilly, whence the latter's misconception, probably (*Simpson's Athabaska Journal* [Champlain Society; Hudson's Bay Record Society, Toronto, 1938], 253).

great improvements already as the Garden produces a variety of Vegetables, and the crops of Wheat, Barley, and Oats look remarkably well. . . ."[40]

Before the year was out, the importance of agriculture to the fur posts in the Northland was brought home to Simpson very vividly by an unpleasant approach to starvation.[41] Colin Robertson wrote to him from the upper Peace River: "Should they [the Nor-Westers] not abandon Dunvegan this winter, they will owe their preservation entirely to their extensive gardens. . . ."[42] Simpson himself wrote to Duncan Finlayson, February 1821:

> Your Garden I am glad to find was productive, but it is very unfortunate that the Potatoes have been injured by Frost . . . Have the goodness to bring a few seed potatoes and a little Barley here in Spring [*i.e.* to Fort Wedderburn, adjacent to the Nor-Westers' post, Fort Chipewyan, on Lake Athabaska] as we must turn our attention to agriculture, and if Colvile House and Fort de Pinette could be also supplied it would be of the utmost consequence: in the event of your stock of seed being insufficient, Mr. Heron [at Fort Edmonton] has abundance. . .[43]

Simpson writes also in his *Report*: "The soil does not admit of extensive cultivation either at Fort Wedderburn or at Harrison House, but with attention Potatoes and other hardy [!] Vegetables might be raised for the Officers Table. At Berens House the Soil is fertile, Grain and Potatoes might be raised in considerable quantity, and if we can obtain Seed I intend having a Garden made there without delay. . . ."[44]

Elsewhere in the *Report* Simpson describes the situation more definitely; and this document carries the combined weight of Simpson's "endorsement" as the putative author together with the longer experience of Philip Miles as the real one. The passage reads as follows:

> The North West Compy have never made any attempt at agriculture in this District, and they are so perfectly aware of the advantages thereof, that if there was any probability of its repaying the trouble and Expense, they would not have neglected it. The Soil is Sterile and the Climate unfavourable; in the immediate vicinity of the Lake [Athabaska] the Shrubs are of stunted Growth, and the Native Fruits and plants seldom come to maturity it cannot therefore be expected *that Exotics* would thrive. . .
>
> Fort St. Marys is pleasantly situated near the confluence of the Smoky River with Peace River, the surrounding Country is rich and Fertile to a considerable extent and easy of Cultivation. . . With little trouble extensive Gardens may be formed, and abundant crops of Grain, Potatoes, and Vegetables raised. . . The N. W. Coy (who evince great ability in all their plans and arrangements and avail themselves of every advantage the Country affords) derive great benefit from this source at Dunvegan, Vermilion, and Fort de Pinnette they have very extensive Gardens, which are of the most essential importance to them. . .[45]

Simpson is unquestionably committed by these utterances not merely to the desirability but to the feasibility of the Peace River region at least for agricultural purposes. We have noted his enthusiastic reference to Carlton in 1820. In 1819, according to Franklin, who wintered there, there were five acres in cultivation at Carlton, producing "ample returns of wheat, barley, oats, and potatoes." May 10, 1820, "wheat was looking well" there, and Franklin states that crops did well at the post.[46] Alexander Ross, eastbound with Simpson in 1825, mentions "good cultivated fields at Carlton, which with moderate industry are said to yield crops of wheat, barley, and potatoes;

[40] *Simpson's Athabaska Journal*, 23.

[41] *Ibid.*, 102–135, 177–202, 223–271, 292–326, 335–346, 360, 394, *et passim*.

[42] *Ibid.*, 80.

[43] *Ibid.*, 280. Colvile House was near the junction of Loon River with Peace River. Fort de Pinette was Fort St. George at the mouth of Pine River on the Peace (*ibid.*, 415, 423). The "abundance" at Edmonton (a highly controversial situation) should be noted.

[44] *Ibid.*, p. 364. Harrison House was at Fond du Lac (*i.e.* "lower (E.) end" of Lake Athabaska. Berens House was on the Athabaska, close by the Hudson Bay Company's Pierre au Calumet (57°30′N). Not to be confused with Beren's River Post on the eastern side of Lake Winnipeg. See A. S. Morton, *Canadian West*, 605, 612, 630, 704.

[45] *Simpson's Athabaska Journal*, 373, 379.

[46] Franklin, *Narrative*, 106, 158; A. S. Morton, *Canadian West*, 638. Morton, *ibid.*, quotes Franklin as saying that "the directors of the Hudson's Bay Company had issued orders for the cultivation of the ground at each of the posts." This being the case, Simpson's earnest advocacy of agriculture in the Northland was a mere preaching to the converted. He apparently left England the year *after* Franklin, and must have known of this decision. Had Simpson's *Report* really been written by him, 1820–1821, he would scarcely have written so. He apparently "overlooked his hand" on this occasion.

the gardens also, produce good returns of onions, carrots, turnips, and cabbages. . . ."[47]

Farther up the Saskatchewan, at Edmonton, we have noted barley in 1810. Simpson's reference to Mr. Heron at Edmonton having "abundance" of seed (including barley) in 1820 would seem to indicate either recent definite information or a standing reputation for plenty, indicating a reliable farming locality; since the Governor's first visit in person was not until 1825, on his way eastward from the Columbia posts. Alexander Ross, travelling with Simpson at that time, mentions "two large parks for raising grain, and, the soil at that time being good, it produces large crops of barley and potatoes; but the spring and fall frosts prove injurious to wheat, which, in consequence seldom comes to maturity. . . ."[48] At this time, Ross expresses what is apparently a general opinion regarding the Western posts that "cultivation is superseding fur."[49]

The decade 1830–1840 witnessed some remarkable developments. In 1830 itself "each Chief Factor was required to include in his reports 'a list of Cattle and other Live Stock and the number of Acres in Cultivation and quantity of seed sown for the next Crop and quantity reaped the preceding Summer.' "[50] In the same year, when, according to Alexander Ross, now a resident at Red River, agriculture first began to play its part,[51] the Hudson's Bay Company established an Experimental Farm some three miles west of Fort Garry, up the Assiniboine River. Everything was of the best and most up-to-date type. It was not a success. Almost as though it were a mere routine proceeding at a fur post, the undertaking was placed in charge of Chief Factor McMillan, whom A. S. Morton describes as "no more than a fur trader and not a very successful one at that." After many years of loss it was decided to close it. The loss was estimated at £3,500.[52]

It was in the middle 1830s that the famous farm, or "farming centre," of Governor Williams flourished most conspicuously at Cumberland House. He had expanded from the "home farm" (as we may term it) at the post, to a community of some thirty homes with between 1,500 and 2,000 acres in tillage, together with considerable numbers of cattle, horses, and pigs. Dr. King, the naturalist in Sir George Back's Arctic Expedition of 1834, described the cultivated (or perhaps settled) area as being "as extensive as a day's march;" and all this had been achieved in a locality which Franklin, Back himself, and Dr. Richardson had described in 1819 as "merely a garden for herbs and a little barley;" and which Richardson, probably the most competent judge of the three, had considered "was not a district which a farmer would choose. . . ."[53]

Poor Williams was too successful. The Great Company did not approve of any demonstration which gave the least suggestion of reality to Selkirk's dream of thirty million settlers in the West![54] Williams was "packed off" to the Southern Department and replaced by Simpson.[55] Knowing their man, London doubtless felt they could trust him to forget his Cumberland enthusiasms of 1820 at their bidding. Their confidence was justified. He rooted out the Williams community and allowed its fruits to revert to the desert waste. We may cite Dr. King again:

> The ground about the house is not only excellent, but fit for immediate culture. The house a few years ago was in most excellent repair, and exhibited a very productive farm, the effect of the continued care and attention of Governor Williams, who had a very great partiality for agricultural pursuits. A vast change, however, had taken place at the time of our arrival; the house was all but falling to pieces; the implements of tillage, and capacious barns, were silent monuments of waste; the horses were becoming wild, the oxen occasional truants; the cows, although they went to the

[47] Ross, *Fur Hunters of the Far West* (London, 1855), 2: 215; Morton (who omits wheat), *Canadian West*, 638.

[48] *Ibid.*; Ross, *Fur Hunters*, 2: 210.

[49] *Ibid.*, 2: 218; *cf.* Harmon (c. 1819), above, note 37.

[50] A. S. Morton, *Canadian West*, 639.

[51] *Ibid.*, 637.

[52] *Ibid.*, 642–643; Oliver, *Canadian North-West*, (quoting Minutes of Council, Northern Department), 1: 643, 648, 663, 674, 681; 2: 697, 857. Alexander Ross and Donald Gunn—residents at that time—state the purpose was to teach farming to the settlers. Morton controverts this (642) by citing the Minutes of 1830, which are *officially* conclusive. But it is unlikely that the minutes were public property at the time, and quite conceivable that Ross and Gunn's benevolent interpretation was the prevailing contemporary view, very possibly emanating from "inspired" sources.

[53] Oliver, Royal Society of Canada, *Transactions*, 10–11.

[54] See the remarks of W. F. Milton and W. B. Cheadle in 1862, *North West Passage by Land* (ed. 9, London, 1901), 40.

[55] "Packed off" is Oliver's expression (11), and very appropriate!

milk-pail twice a day, gave by no means a Virgilian quantity of that sober and refreshing beverage; a solitary hog stood every chance of dying without issue. . .[56]

Nor was even this sufficient. In addition, Simpson suddenly made the discovery that farming along the Saskatchewan was an unpractical delusion. The private contemporary comments of his "rubber-stamp" Chief Factors on these departmental gymnastics would have been illuminating.[57]

We may gauge the full measure of Simpson's double-dealing when we realize that the following enactment of the Northern Council, in other words, of Simpson, belongs to these very years (1833):

> That Gentlemen in charge of Posts in Peace River where the climate and soil are favourable to cultivation be directed to devote their attention to that important object forthwith, as it is intended ... that these districts shall depend on Peace River alone for their flour after the close of Outfits 1834. . .[58]

In the first year of the following decade (1841), the Governor crossed the western continent on his famous voyage around the world. Travelling overland, his first point west of Red River among the farming centers was Carlton. Of that place he writes: "In the immediate vicinity there are large gardens and fields, which produce abundance of potatoes and other vegetables; but wheat, though it has sometimes succeeded, has been far more frequently destroyed by the early frosts of autumn, which, even on Red River occasionally blight the hopes of the less active among the settlers. . . ." Farther westward, at Edmonton, he viewed the farm. He observes that barley "generally yielded a fair return; but wheat was almost sure to be destroyed by the early frosts. . . ."[59]

Whatever Simpson meant to say, his language concerning Red River certainly implies that to the industrious farmer at least, wheat there was as reasonably reliable a crop as it is at the present time. When his *Journey Around the World* appeared in 1847, it was found that he had described the Red River area very much to that effect. His efforts in 1857 to hedge and explain away these inconvenient eulogies must have caused contemptuous amusement to the Great Company's critics in England.[60]

Other men besides Simpson were travelling through the Canadian West in the forties; and however incomplete their information may be, they at least tell us something. Lieutenant-Colonel J. H. Lefroy, in the course of an astronomical mission to the far Northland, saw during the years 1842–1844 virtually every point between Red River and the Rocky Mountains where cultiva-

[56] The quotation is printed by A. S. Morton (*Canadian West*, 699) whose only comment is that "The best days of Cumberland House, whether as a depot or a fur post, were now past; the furs were depleted, and many of the Indians had moved away . . ." There is not a word of Simpson's share in the agricultural ruin, nor of comment on his change of front. *Cf.* above, notes 6–7.

[57] See Oliver, Royal Society of Canada, *Transactions*, 10–14; for the "yes men," see R. Glover, *Canadian Historical Review*, 29: 430 (1948); E. E. Rich, *ibid.*, 30: 281 (1949). For data concerning garden produce at Cumberland House, c. 1820, see Hind, *Report, 1858*, 130; and a short summary on agriculture there, 1820–1840, in Sir John Richardson, *Arctic Searching Expedition . . . 1847–1850* (London, 1852), 391. Before the Canadian Governmental Committee of 1857, George Gladman (ex-Chief Factor, the only witness with Western experience) stated what when he was "in the Northern Department at Cumberland House he saw excellent wheat grown and ground to flour in a steel hand-mill . . ." (A. S. Morton, *Canadian West*, 828). Hind, in *Report, 1858*, 34–35, 65–67, 74, 75; also Dr. G. M. Grant, *Ocean to Ocean* (Radisson Society of Toronto, 1925), 153, and Sandford Fleming, *Explorations and Surveys for a Canadian Pacific Railway* (Ottawa, 1874), 68, etc., noted the great fertility of the region at large.

[58] Oliver, *Canadian North-West* (Minutes of the Northern Council, 1830–1843), 2: 692; cited also by A. S. Morton, *Canadian West*, 639.

[59] Sir George Simpson, *Journey Around the World* (London, 1847), 1: 84, 105.

[60] Before the Select Committee of 1857 in London, Simpson said of the Red River region: "The banks of the river are alluvial, and produce very fair crops of wheat; but these crops are frequently destroyed by early frosts; there is no certainty of the crops . . ." (A. S. Morton, *Canadian West*, 832). When confronted with his book above mentioned, Simpson tried to insist that this fertile tract was a purely riparian strip that ended a short distance back from the river. This—from one who "knew more of the country as a whole than all the other witnesses put together" (A. S. Morton, 832)—was a deliberate falsehood. Morton says: "The Governor proved a very cautious witness." (*ibid.*, 820). He certainly had need. See the *Report of the Select Committee* (London, 1857), 45–51, 56–71, 76–77, 83–85, 90–104, etc. *Cf.* also J. S. Galbraith, *Canadian Historical Review*, 30: 329 (1949).

tion was even being attempted. In addition to such centers as Carlton and Edmonton, these included Norway House, Cumberland House, Pasquia River (LePas), Lake à la Crosse, Lake Athabaska, and Forts Simpson and Norman on the Mackenzie River; the last two being in 62° N, and 64°51′ N, respectively. Even at the far northern posts, barley was being successfully grown; and wheat was being raised about one year in three at Fort Liard, on the Liard River, slightly north of 61° N.[61]

There are some weather notes in the Journal of the Rev. Robert Terrill Rundle,[62] the first resident European missionary west of Lake Winnipeg (Edmonton, 1840–1848):

> Left Carlton about 9 a.m. Mr. Small [Patrick Small, the trader there] supplied me with fresh Buffalo beef, dried meat, pemmican, flour, potatoes, and turnips. . ." (October 2, 1840)
> *Carlton*: "The frost has injured the potatoes; this certainly is not so good a place as Edmonton for gardening. . ." (June 17, 1845)
> *Battle Lake*, Alberta: "Soil unfrozen. . ." (November 3, 1845)
> *Edmonton*: "Carrying turnips; . . . winter still keeps off. . ." (November 12, 15, 1845)
> *Edmonton*: "Potatoes looking well. . ." (July 14, 1846)
> *Edmonton*: "Frost!" (almost as an event; April 14, 1847)
> *Battle Lake*: "Gardening. . ." (May 3–6, 1847)
> *Battle Lake*: "Frost. . ." (previous to, July 15, 1847)
> *Pigeon Lake*: "Gardening. . ." (June 8, 1848)[63]

To a modern Albertan like the present writer (Alberta, 1894–1944), the premier significance of the foregoing extracts lies in their positively stereotyped agreement, in respect of dating, with similar phenomena down to the present time.[64] They are, moreover, precisely such events as have been emphasized by Simpson and his defenders, contemporary or later, as "proof" of the utter unsuitability of the earlier Northwest for agricultural development.

The Rev. Dr. John McDougall, the pioneer missionary (Alberta, 1862–1917), refers to wheat and barley being grown at Whitefish Lake (north of the Saskatchewan River, 54°20′ N, 112° W) in the 40s and 50s.[65] At the very time when Simpson's *Journey Around the World* would be in the press, Father De Smet (1801–1873), the famous Catholic missionary to the western Indians, mentions wheat at Edmonton, where he wintered, 1845–1846; although between October and March he did not of course see it in the field.[66] Paul Kane, the artist, then on his return journey from the Columbia in the winter of 1847–1848, stayed over at Edmonton for several months, and gives some valuable details. He says there were

> . . . plenty of good potatoes, turnips, and flour. The potatoes are very fine, and the turnips do well here. Of wheat, they can of course have only one crop; but with very indifferent farming they manage to get from 20 to 25 bushels per acre. The crop, however, is sometimes destroyed by early frost. The corn [*i.e.* wheat]

[61] Oliver, Royal Society of Canada, *Transactions*, 12. See also Richardson, *Arctic Searching Expedition*, 106, who wrote that the Liard "may be considered as the northern limit of the economical culture of wheat . . . ," with which *cf. ibid.*, 389, 410–412. See further, Sir John Richardson, *The Polar Regions* (London, 1861), 270; C. R. Tuttle, *Our Northland* (Toronto, 1885), 417; John Macoun, *Autobiography* (Ottawa, 1922), 113, 117; E. T. Seton, *Arctic Prairies* (New York, 1911), App. A, 311–317.

[62] Rev. J. P. Berry and F. G. Roe, ed., Journal at Fort Edmonton, 1840–1848 (unpublished). This manuscript is in the McDougall Memorial Museum, Edmonton, Alberta.

[63] Battle Lake and Pigeon Lake are respectively about 70 and 50 miles southwest of Edmonton. The two conjointly constitute the source of the Battle River, which joins the North Saskatchewan at Battleford.

[64] A disastrous frost, August 15, 1895; Aug. 24, 1928; Aug. 26, 1950, in Central Alberta and Edmonton areas at least. The very worst summer frost of all, in the Red Deer district ("too soon and too late"), July 21, 1896. On the morning of May 13, 1942, the mercury in Edmonton stood at 10° Fahr.—22° of frost! Two green ash trees (*fraxinus viridis*) just leafing on my own lawn were killed outright. Conversely, I was fall-plowing up to Nov. 22, 1904; and a neighbour of mine sowed wheat on March 8, 1905. All my own fall-plowed ground was in before March 31, 1905.

To say in 1857 (as above, note 63) there was "no certainty of the crops," and to cite that as weighty evidence today, are equally idle. There is no certainty now to the individual farmer. While preparing these pages, I noted press announcements that the Saskatchewan wheat crop "would be reduced by 65,000,000 bushels as a result of the recent frosts." British Columbia, *Victoria Daily Colonist*, Aug. 24, 1950. Yet the great annual harvests vary only in fractional degrees.

[65] John McDougall, *On Western Trails in the Early Seventies* (Toronto, 1911), 35. On Whitefish Lake, see Coues, *Henry Thompson Journals*, 2: 573.

[66] *Life, Letters and Travels of Father Pierre-Jean De Smet* (ed. H. M. Chittenden and A. T. Richardson, New York 1905), 2: 532, 533.

is ground in a windmill, which has been erected since my last visit here [westbound, September, 1846] and seemed to make very good flour. Indian corn has been tried, but it did not succeed owing to the very short summer. . .[67]

The year 1850 ushers in what is the most important period in our inquiry. In this decade some further agriculturist residents appear on the scene. It is also the era of the two great investigating missions by competent scientific observers—those led by Palliser and Hind respectively; and of the significant political inquiries by the Parliamentary Select Committee of 1857 in London, which the advance of public opinion in Canada and in Great Britain had rendered inevitable.

In 1850 Father Taché (afterwards Archbishop) settled at Lac la Biche. He was followed in 1852 by Father Lacombe, who after due consideration in 1858 removed the headquarters of the "Edmonton mission" (as we may term it) from Lac Ste. Anne, forty miles westward, to its present situation at St. Albert, only 10 miles northward. The latter magnificent selection has been the admiration of all who have ever seen it.[68] Lac la Biche is perhaps less well known, but it soon acquired a reputation as an unfailing source of supply for wheat, both for the Catholic missions of the area and for general use.[69]

The Earl of Southesk (1859) may have been generalizing from what was possibly a dry season He writes concerning Fort Pitt, Saskatchewan: "Farming seems precarious here; barley, for instance, does not grow above a foot high and will not ripen; nothing, in fact, thrives but vegetables. At Edmonton, however, wheat as well as barley ripens."[70]

The investigations of Palliser and his colleagues, of whom Dr. (afterwards Sir James) Hector was the chief and the outstanding scientist, covered the entire Western territory in Canada from the first approach to the prairies, east of Red River, to the Rocky Mountains, and beyond, including much examination of the mountain passes in search of a practicable railway route, with which we are not here concerned. Their report, which is the only one of its kind at that early date for that territory, is fully comprehensive and cannot be superseded as an early historical source. It includes climatic data of every character, including depths and durations of winter freezings.[71] Our simplest course is to follow the party westward.

Their first mention of wheat is at Dog Mission, on the Winnipeg River, northeast of Fort Garry (Winnipeg). Palliser gives the growing season there as from May 15 to October 15—153 days.[72] This may have predisposed them against Western Canada as a wheat country; as well it might, if 1857 were a normal season! He and his colleagues stressed the liability of the land to summer frosts,[73] and probably for that reason considered the ripening of wheat "doubtful" at Red River.[74] Qu' Appelle, on the river of that name and no great distance from the Fort so called, where Charles Pratt, a native missionary, had established a thriving settlement previous to 1857, apparently came under the same ban.[75]

The afore-mentioned instance of 153 days for a wheat growing season, and two others which appear to have been very invidiously selected, are made the basis by A. S. Morton for "an average season" of 135 days at Red River.[76] The two others are,

[67] Paul Kane, *Wanderings of an Artist Among the Indians of North America* (Toronto, 1859), 366; *ibid.*, (Radisson Society, Toronto, 1925), 256. *Re* "Indian corn," during 35 years in Edmonton, we ripened our own seed for three consecutive years, about 1930–1933, the only triennium of the kind in my own personal experience. Very probably others may have surpassed that.

[68] See Katherine Hughes, *Life of Father Lacombe* (Toronto, 1911), part 1; a good description in Milton and Cheadle, *North-West Passage*, 179–182.

[69] Archbishop Taché told G. M. Grant in 1872 that Lac la Biche (55°N, 112°W, 100 miles north of Edmonton) was "their favourite wheat ground, where the wheat crop could always be depended on" (Grant, *Ocean to Ocean*, 179, 203). John McDougall mentions their "good wheat crop" in 1865, from which he brought seed for 1866 (McDougall, *Pathfinding on Plain and Prairie* [Toronto, 1898], 147). *Cf.* Macoun, *Manitoba*, 198–200, also 111 (grist-mill).

[70] J. C. Southesk, *Saskatchewan and the Rocky Mountains* (Edinburgh, Toronto, 1875), 286. Fort Pitt lies north of Lloydminster, which latter is on the Saskatchewan-Alberta boundary line (110°W).

[71] John Palliser, *Journals, Detailed Reports, and Observations, Relative to the Exploration, by Captain Palliser of British North America, 1857, 1858, 1859, 1860* (London, 1863).

[72] Palliser, *Journals*, 35.

[73] *Ibid.*, 6, 9, 13, 46, 90, 145, 269, 282.

[74] *Ibid.*, 9, 13, 70.

[75] *Ibid.*, 51; but *cf.* Oliver, Royal Society of Canada, *Transactions*, 13.

[76] A. S. Morton, *Canadian West*, 832; 137 days, according to W. L. Morton, *Canadian Historical Review*, 30: 308.

147 days at Edmonton in 1855, and 159 days at the mouth of the Winnipeg River in 1858.[77] It is difficult to avoid the conclusion that this arbitrary selection, only very faintly qualified by reference to occasional "favourable seasons" (unspecified),[78] furnished an opportunity to vindicate Morton's paragon, Sir George Simpson.

A period of 159 days by no means constitutes a record. The present writer, from his own personal experience, can eclipse that period utterly.[79] But it proves nothing whatever. A. S. Morton's contentions and their underlying implications are open to serious question here, as W. L. Morton has very cogently pointed out.[80] The former's analysis, upon which his resultant average of 135 days for Red River is based, is marked by incomplete and faulty reasoning, which virtually nullifies his argument. Secondly, and even more serious, he has ignored evidence of recorded years revealing a much shorter growing season. Some of such evidence is found in the same pages from which he quotes for the purpose of proving the contrary position.[81] We shall discuss this latter phase of the question first.

In the year following Palliser's visit to Dog Mission, as noted above, Hind, calling the same place Islington Mission, records a wheat crop which matured in 93 days and was reaped within 98 (May 20–August 26). Hind moreover draws attention to 1857, the year of Palliser's long-drawn out season, being a very wet and backward spring. Following upon these considerations, he believed that in generally favorable seasons, a 90-day season might be looked for.[82] A similar opinion was expressed to the Select Committee of 1857 in London by Colonel Crofton, who had been in Red River in 1846–1847. This witness drew upon his own recollections and the common trend of local agriculturalist opinion there.[83]

An even more authoritative witness is Donald Gunn, who was a resident of Red River, a trained observer and recorder of events, and a practical farmer. He had lived in the Settlement since 1823. He reports his own wheat crop in 1856, of which there were two sowings. The first, sown April 29, was ripe August 14; the second, sown "beginning of May," was ripe August 20; wheat cutting was finished August 28. W. L. Morton equates the second seeding date with May 1; and the resulting times are 107 and 112 days respectively.[84] Simpson himself, before the Select Committee in London, believed the practice was to sow wheat early in May and to reap it in August. Allowing for all of May and on to August 15, this would be 107 days; to August 31 would be 123 days.[85] Such periods—not to say the 107–112 days of Donald Gunn—would indeed be "far and vitally short" of A. S. Morton's Red River average of 137 days, which he computed "from the few data to hand."[86] W. L. Morton's own final conclusion is that "the crop season—from the first day of sowing to the first day of reaping—for Red River wheat from 1850 on was, on conservative figures, from 110 to 120 days. The better Red River farmers at least grew wheat without much fear of early fall frosts."[87] A

[77] *Ibid.*, A. S. Morton here has 153 days at Edmonton, 1855—"sown in the last days of April and the first of May, and was being harvested in the last days of September and the first of October—153 days later," 832. Elsewhere, however (*ibid.*, 701), Morton has for 1855 at Edmonton: "sown on 3rd May, and the grain was being harvested from 25th September to 1st October—135 days later;" which is perhaps a misprint. W. L. Morton strikes an average harvest date, Sept. 27, which makes 147 days; the figure he adopts (*Canadian Historical Review*, 30: 308 (1949)).

[78] A. S. Morton, *Canadian West*, 832.

[79] In the Red Deer "Canyon" district, south of Lacombe, Alberta, our crops were "snowed down" in three consecutive seasons, with a few early exceptions, and had to be cut one way (1899, 1900, 1901). These years were the beginning of the wet cycle of 1899–1903, inclusive. In 1899 our harvesting (including stacking) was not completed until about Nov. 28. In 1900, from Sept. 23 until Oct. 12, we had a "white world," and could only move around on sleighs. Our fields were not cleared that year until about Dec. 8. In these two years, I did not fall-plow a single foot of ground. In 1901, the easiest of the three, I commenced cutting Sept. 28, and completed stacking Oct. 25. I had five days stubble-plowing; Nov. 1, the ground froze up. On a hillside farm, the lower portions then quite wet, the frost penetrated some three inches that first night, Oct. 31, and never relaxed.

[80] *Canadian Historical Review*, 30: 308–314 (1949).

[81] W. L. Morton, *ibid.*, 308–311, mentions seven statements contained in evidence consulted by A. S. Morton (including one from Simpson himself) showing facts or informed opinion in support of a shorter season, down to as low as 90 days.

[82] W. L. Morton, *ibid.*, 309; so also J. J. Hargrave, *Red River* (Montreal, 1871), 178.

[83] W. L. Morton, *Canadian Historical Review*, 30: 308–309 (1949).

[84] *Ibid.*, 309, not mentioned by A. S. Morton.

[85] *Ibid.*, 308, not mentioned by A. S. Morton

[86] *Ibid.*, *cf.* A. S. Morton, *Canadian West*, 832.

[87] W. L. Morton, *Canadian Historical Review* 30:

similar variability is characteristic of Alberta, whose average frost-free period is shorter than that of the Red River Valley.[88] In the period 1894–1908 (the year I ceased farming) we considered it late if we could not commence cutting our main crops by September 1st. In 1908 we were over half finished by that date, always a memorable recurrence in our own family.[89] In 1904, however, we commenced our cutting on August 17th. Nor is this date to be ascribed entirely to a progressive lengthening of the season arising from greatly-increased or "mass" cultivation. For in 1859 the wheat harvest at Father Lacombe's mission at St. Albert began on August 19th.[90]

W. L. Morton draws very necessary and relevant attention to another important circumstance in A. S. Morton's computation of the supposed average growing season of 137 days. The latter has assumed this to be a rigidly fixed and unvarying period, susceptible of no modification whatever other than can be achieved by the development of earlier-ripening varieties of wheat. That is a movement of slow growth; it is not commonly until growing of cereals has become an industry of actually or potentially national dimensions that such demands arise and clamor for attention. Before that day comes, however, the influence of extensive large-tract cultivation in warming a soil and thus contributing to lengthen the frost-free period is a potent force which must not be overlooked. A. S. Morton ignores this completely.[91]

An even more fruitful source of confusion lies in the latter's vague and ill-defined use of the term "growing season." This is manifestly applied to the entire period from the sowing of the crop to the end of reaping, at the very least; perhaps—for all one can discover—even to the final completion of stacking. The narrow literalist could very plausibly argue that a crop was not *harvested* at any stage short of that consummation. Even with the most ideal harvest weather the slow methods of hand labor then in vogue would prolong the harvest season, whether or not the crop was already completely ripe or sufficiently so to be past danger. An historian who has virtually traced the cultural evolution of a quasi-European civilization over a continent should not need to be himself a practical farmer to grasp the force of such considerations. In any event, to include a *growing season* which is protracted until October, as a salient feature in an argument which is based fundamentally on the almost inescapable menace of frost visitations "as early as the last week of August"[92] is a contradiction in terms, and a crowning absurdity. I was myself only too well aware during my own "growing season" of some 190 days in the year 1900, that very little growing occurred during the final 75 or 80 days!

Even Simpson himself seems to have felt that denial was useless in the case of Red River, although he would have confined that name to the narrow "river-lot" farms bordering on the stream and extending back some 600 yards or more. Simpson persistently sought to establish that these lots really comprised the limits of the fertile alluvial soil; but this was emphatically denied by residents whose knowledge of Red River was superior to his.[93] Actually, the river-lot surveys did not represent the limits (or anything like them) to which the land *could be* cultivated; but the local limits to which it *was* cultivated, under a survey system imported from some outside source. Even then, however, there were existing exceptions to these riparian plots, which Simpson did not specify.[94]

In was really in relation to the question how far the fertility conditions of Red River could be predicated of the North-West at large that Simpson's explicit or implied falsehoods reveal their real

311 (1949). Morton's very balanced and judicious paper should be read in its entirety. *Re* early frosts, the writer's elder brother reached Manitoba from England at the end of July 1889 and made his first home in Springfield, east of Winnipeg, then very much in the woods. At that date a frost was expected almost automatically about August 17, whether provincial at large or in the Springfield vicinity I am unaware; but I never remember hearing mention of it as a dreaded menace. Apparently wheat was expected to be cut, or past any danger stage.

[88] 110 days for the Saskatchewan Valley against 120 for Red River; so, W. L. Morton, *Canadian Historical Review*, 30: 308 (1949).

[89] Sept. 1 was my mother's birthday, which was generally the occasion for a gathering of our neighbors' wives at what was usually the last summer festivity of the year. This made the date conspicuous.

[90] Hughes, *Life of Father Lacombe*, 75.

[91] See W. L. Morton's remarks on the shorter growing season at St. Peters, on the lower Red River, below Fort Garry. *Canadian Historical Review*, 30: 314 (1949).

[92] A. S. Morton, *Canadian West*, 832; *cf.* W. L. Morton's remarks, *Canadian Historical Review*, 30: 311, n. 23 (1949).

[93] Even A. S. Morton only claims for Simpson a greater knowledge of the country "as a whole" (above, note 63).

[94] See. W. L. Morton, *Canadian Historical Review*, 30: 317–318 (1949), and authorities there cited.

significance. Even the meagre array of evidence presented here reveals his damnings with—or without—faint praise at their true value. Evidence from his resident factors in the territory is conspicuous by its absence.[95] His principal—almost sole—North-West supporter is John Miles. This gentleman stated that the only farming carried on along the North Saskatchewan was on a small farm at Edmonton, where they had put up a windmill and had tried to grow wheat, oats, and barley. Wheat had proved impossible, but barley and oats were both successful.[96] The quotation from a contemporary eye-witness, Paul Kane, cited above, enables us to date the mill precisely. It is clearly the culmination, on Simpson's own authority, of more than twenty-five years of farming practice.[97] John Miles's adverse testimony would manifestly suggest unbridled optimists who had first erected a mill and then discovered that it would be of no use to them! He said so.

Sir John Richardson and his former associate Dr. John Rae, together with Dr. John McLoughlin —the last two old Hudson Bay Company's men and of long experience—all thought very differently. McLoughlin considered the territory between the North and South Saskatchewan Rivers suitable for cultivation and settlement; while Dr. Rae, who had a wide knowledge of what we should now term Northwest Canada, declared the country "all capable of cultivation."[98] Other facts relating to wide areas confirm this opinion. Yet A. S. Morton, who ignores this testimony, actually says, on the basis of the *one* season of 1855 aforementioned: "No wonder that with such a late maturing variety the wheat was damaged by frost, and that the Company's officers, including Sir George Simpson himself, had no faith in the Saskatchewan as a wheat-raising region."[99]

The only scientific observer whom A. S. Morton quotes (beyond an occasional isolated sentence) is Hind, whose words do not refer to the real bone of contention, the "Fertile Belt." Hind wrote:

> The boundary of the prairie country, properly so called, may be roughly shown by a line drawn from the great bend of the Little Souris . . . to the Qu'Appelle Mission, and from the Mission to the Moose Woods, on the South Branch [modern city of Saskatoon]. South and west of this imaginary line, the country as a whole must be ranked as a level, or slightly undulating, treeless plain, with a light and sometimes drifting soil, occasionally blown up into dunes, and not, in its present condition, fitted for the permanent habitation of civilized man. . .[100]

A. S. Morton contends that wheat-growing on a nation-wide scale was virtually impossible prior to the development or introduction of quicker-maturing wheats, such as Red Fife, and later, Marquis.[101] As he discusses the question, by ignoring contrary evidence, it is not difficult to "prove" this. But other evidence presented by the much more cautious scholar here frequently cited, seems to establish quite clearly that what was needed and sought after by agricultural biochemistry was

[95] See above, note 8.

[96] Oliver, Royal Society of Canada, *Transactions*, 11–12. This is the man who declared before the Select Committee of 1857 in London that he had "never heard" of the Yellowhead (or "Leather") Pass, the present summit route of the Canadian National through the Rockies (*Report of Select Committee*, p. 261). A similar ignorance in A. K. Isbister, a foremost assailant of the Hudson's Bay Co. (*ibid.*, 355), is more pardonable, as he had been out of Canada since 1839 (A. S. Morton, *Canadian West*, 819); whereas Miles had been across the Rockies in 1852 (*ibid.*, 767). Dr. Hector, then actually looking for a practicable railway route, was taken by his guides in 1858 past the Miette River mouth (modern Jasper, Alberta), the gateway to this lowest railway summit on the American continent, without either his guides or the H. B. Co. people at Edmonton, Lac Ste. Anne, or Jasper House furnishing him with any information about this pass (H. Y. Hind, ed. *Biritsh-American Magazine*, 1: 174–177, 272 (1863)). It first appeared on Arrowsmith's *Map of British Columbia*, 1860 (*ibid.*). Yet it had been in regular use for leather supplies (hence the name) to the interior "Northern Columbia" posts since the thirties, at least (Minutes of the Northern Council).

In 1863, however, when the iron hand of Simpson no longer ruled (died 1860), Milton and Cheadle were fully notified of this route (and warned against it) by the chief Factor at Edmonton (*North-West Passage*, 192). See on this, A. S. Morton, *Canadian West*, 700.

[97] Above, notes 44, 62.

[98] Oliver, Royal Society of Canada, *Transactions*, 10–12.

[99] A. S. Morton, *Canadian West*, 701. "Simpson and the officers" really means Simpson, whose dicta were decisive on anything!

[100] Hind, *Report, 1858*, 31; *cf.* 52–53. The Qu'Appelle Mission is that of Charles Pratt (above, note 78). One cannot but contrast Morton's readiness to quote Hind here (*Canadian West*, 835) with the suppression of Hind's evidence and opinion *re* 90-day wheat (above, note 85). See on this, F. G. Roe, "Early Opinions on the 'Fertile Belt' of Western Canada," *Canadian Historical Review*, 27: 131–149 (1946).

[101] A. S. Morton, *Canadian West*, 701–702, 832.

not merely, or even principally, an *earlier* wheat, but a *better* wheat; better in hardness for milling purposes, which was attained (perhaps unsurpassably) by Red Fife, the famous "Number One hard," and in rust-resisting powers, in which even Red Fife left something to be desired.[102] The "mongrel, soft wheat of Red River," as it was apparently termed after better varieties had dethroned it,[103] was at least quite sufficient to demonstrate the capacity of Red River to ripen wheat and was in all probability quite satisfactory to its producers so long as wheat growing remained a merely local affair. After all, softness and hardness are irrelevant until the wheat has first been *grown*; and it seems probable from W. L. Morton's figures that the lengthened growing season due to increased mass territory under cultivation has had as much to do with greater security for wheat-growers, as the shorter life-period resulting from biochemical selective investigations.[104] "Margins of six days" would be a perilous exclusive basis for one's hopes of attaining immunity from frost![105]

[102] W. L. Morton, *Canadian Historical Review*, 30: 308–315 (1949).

[103] *Ibid.*, 311. According to an authority there cited, the wheat so designated "was still being sown in Alberta in 1898." We had what some considered a sort of bastard variety, Club ("if you'd call *that* stuff wheat"), which seems to answer the description. I never remember seeing any after 1896; but it may well have been still sown among the Russians and Galicians in Northern Alberta, who were rather given to growing a patch for their own use, as a sort of "hominy," or a very coarse home-ground (or "cracked") "blackbread." I worked on farms in southern Alberta, south of Calgary, 1896, 1898, 1902, 1903. All the wheat I saw or heard of down there was of standard types; whereas the Club was soft (one could eat it ripe after standing in shock), with a head of only two inches maximum length. Apart from some around Edmonton, very few of the later settlers (1890, *seq.*) were raising wheat in northern Alberta, and none on a large scale. As late as 1908, in the rich Lacombe district, north of Red Deer, it was rather reckoned as a gambler's crop, partly because of fear of frost, and partly because the elevators would not take it. I grew splendid wheat in 1905 and 1906; and had to haul it 22 miles to Red Deer, and received $.46 (forty-six cents) per bushel! ($.66 at Fort William). I saw occasional small fields of fall wheat in northern Alberta, where it was popularly considered "impossible," about 1903.

[104] Morton, *Canadian Historical Review*, 30: 308–315 (1949).

[105] Marquis six days earlier than Red Fife: A. S. Morton, *Canadian West*, 832.

While the question of transportation facilities was obviously one crux in the problem—perhaps the crux as viewed in the light of a nation-wide agricultural industry or in the lengthy perspective of the historian—it does not in my view occupy the supreme position, the culmination of the argument, which A. S. Morton seems inclined to assign it.[106] Simpson, with the keen instinct of self-preservation, saw unerringly where their real danger lay. He concentrated on the virtual impossibility of *growing* the wheat, and A. S. Morton has done the same.[107] If that could have been satisfactorily established, nobody need trouble about railways! That agitation would have died a natural death, and the fur preserve would very probably have remained unmolested for years to come. The intransigeant British Columbia of the sixties had scarcely yet appeared above the political horizon.

Pioneer Farming, 1857–1880. Such evidence as I have been able to collect governing the remaining period from the time of the Select Committee of 1857 until the era of settlement (roughly 1880) presents nothing to overturn the general conclusions which logically follow from the foregoing data. It strongly confirms them. Since these concluding items are rather scanty, they may conveniently be presented regionally rather than chronologically, taking the more easterly territory first.

Hind, in 1859, printed some figures on garden produce at Fort à la Corne (Saskatchewan River, 53° N; some distance eastward of the Forks and the modern city of Prince Albert); but I have found nothing for the period 1852–1858 concerning field crops there.[108] At Prince Albert itself, the Rev. James Nisbet commenced a mission in 1866, and established an industrial farm in connection therewith. This may be said to have been the inception of the modern city. From 1868 onward, this community raised large crops. Their first crop, in that year, yielded 600 bushels from 17 bushels sown; an average which can scarcely be less than 50 bushels per acre![109] In 1872, G. M. Grant observes at Prince Albert, that "barley and potatoes were always sure; wheat generally a success. . . ."[110] In 1879 wheat at Prince Albert ripened about August

[106] *Ibid.*, 831–832.

[107] *Ibid.*, 920, *seq.*

[108] Hind, *Report, 1858*, 34–35, 129; also in Oliver, Royal Society of Canada, *Transactions*, 14.

[109] *Ibid.*, 15–18; (*i.e.*, sowing 1½ to 2 bushels per acre).

[110] Grant, *Ocean to Ocean*, 153.

15; Battleford being described as "a little earlier."[111]

Another missionary furnishes a graphic description of primitive early agriculture at Norway House (53° N):

> One summer I carried out, in a little open boat from Red River, a good Scotch iron beam plough. The next winter, when I came in to the District Meeting, I bought a bag of wheat containing two bushels and a half; and I got also thirty-two iron harrow teeth. I dragged these things, with many others, including quite an assortment of garden seeds, on my dog-trains, all the way to Norway House. I harnessed dogs to my plough, and ploughed up my little fields; and, after making a harrow, I harrowed in my wheat with the dogs. The first year I had thirty bushels of beautiful wheat. . .[112]

Working westward from the Saskatchewan Forks, we may quote a summary from the pen of a resident, about 1868; the later publication of which might class it as unreliable, had it not been so abundantly verified in fact. The Rev. John McDougall writes: "From the north branch of the Saskatchewan, extending a hundred miles north [from Carlton], and then west along its whole length, is to be found one of the richest portions of Canada. . . . The whole land from Carlton to Victoria is one ready-made farm. . . ."[113]

We have two most interesting references to this country northward from Carlton. Some fifty miles from Carlton the Rev. John Hinds established a mission at Sandy Lake in 1874, giving particular attention to agriculture. In 1879 spring wheat was ready to cut on August 20.[114] One hundred and fifty miles north of Carlton is Green Lake, on the Methy Portage route to the Clearwater and the Athabaska. We have already noted Peter Fidler's garden there, about 1803.[115] Macoun, who travelled back this way from the Peace River country in 1875, describes the soil as fit for wheat culture.[116] The present day settlement along Beaver River (of which Green Lake forms part at flood seasons) would endorse Macoun's judgment. Railway communication from Edmonton is some twenty years old, and wheat in large quantities is moved out.

At Battleford the Toronto *Globe's* correspondent and Macoun himself were agreed on the excellence of the region for agriculture. The latter himself, about August 1, 1879, found "excellent oats, middling barley, . . . and first-class wheat, the latter standing thick on the ground, nearly five feet high, with correspondingly long ears, nearly ripe."[117] At Victoria, Macoun—then in the first fever of his Northern enthusiasms—[118] noted agriculture in 1872; and looked to agricultural activities and stockraising as the future occupation of the half-breeds when the buffalo failed.[119] This vision may be said to have been accomplished in Father Lacombe's settlement of St. Paul des Mêtis, some forty miles eastward of Victoria, along the Saskatchewan.[120] The Indians at Fort Pitt, between Carlton and Victoria, must have been practising agriculture some time before 1876. For a chief there told Governor Morris in that year: "I have no hoes; I make them out of the roots of trees. . . ."[121] Conversely, however, in the same years, a colony of half-breeds migrated from Red River to the Carlton and Duck Lake country, where they apparently proposed to discard agriculture, if they had ever seriously practised it, and live on the buffalo.[122]

Edmonton has already been discussed for the

[111] Macoun, *Manitoba*, 227.

[112] Rev. Egerton R. Young, *By Canoe and Dog Train* (London, 1892), 180. The date would be c. 1870–1872. Young went to Norway House in 1868, and was appointed to Berens River in 1873 where Governor Morris (1876) speaks highly of him: *Treaties with the Indians of Manitoba*, etc. (Toronto, 1880), 147, 348.

There were apparently domestic cows at Norway House, about 1840. The Rev. James Evans, the pioneer missionary, was able to take frozen milk on some of his winter journeys ("Journal," Dec. 14, 1840, in *Wesleyan Missionary Notices* [London, 1843], 229). This was out of the buffalo habitat; but I have found nothing further to suggest agriculture there at that date.

[113] McDougall, *Pathfinding*, 273. Victoria was the McDougalls' mission home (now Pakan), some 90 miles below Edmonton on the Saskatchewan, 111°40′W.

[114] Macoun, *Manitoba*, 110–111.

[115] Above, note 19.

[116] Macoun, *Manitoba*, 116.

[117] *Ibid.*, 99–101. ". . . wheat sowed as late as June 10th generally escapes the frost, and . . . barley will produce a crop ten days later. *All good* farmers say that grain should not be sown later than June 1st. . ." (*ibid.* 226). That refers to Battleford.

[118] See F. G. Roe, *Canadian Historical Review*, 27: 131–149 (1946).

[119] Macoun, in Sandford Fleming, *Explorations and Surveys for a Canadian Pacific Railway* (Ottawa, 1874), 68, 69. Compare Macoun's attitude in 1882 as expressed in his book, *Manitoba*, 112.

[120] See on this, Katherine Hughes, *Life of Father Lacombe*, 357.

[121] Morris, *Treaties with the Indians*, p. 289.

[122] See A. S. Morton, *Canadian Historical Review* 15: 215 (1934); the best accounts: G. F. G. Stanley,

earlier days. Among the witnesses of the period now under discussion, Milton and Cheadle wrote in 1863: "Wheat grows luxuriantly here, and potatoes and other roots flourish as wonderfully here as everywhere else on the Saskatchewan. . . ."[123] Captain (afterwards Sir William) Butler stated in 1871 in his report to Governor Archibald at Fort Garry that summer frosts "were often injurious to wheat, but all other crops thrive well, and even wheat is frequently a large and productive crop. . . ."[124] Macoun's picture of the place in 1872 is that of a lawless, almost terrorized community by reason of Indian savageries. He adds: "The state of farming was very little better. Fully one-half of the ripened wheat was smut; and doubt prevailed whether the climate was at all suited for that grain. . . ."[125]

This characterization calls for some comment. A later writer who is uncritically eulogistic as a rule, speaks of Simpson "impressing the golden character of silence" upon his Factors.[126] Edmonton had evidently learnt its lesson. Even to Butler, an official investigating emissary from Red River, keen and outspoken, and who had, moreover—as they would surely know—sojourned with the enthusiastic McDougalls at Victoria, they would tell nothing favorable to agriculture. Many years later, Butler wrote as follows:

> Among all the officers of the Hudson's Bay Company, I did not know one who believed in the potentialities of the country in which they had spent their lives. Furs it had, and minerals it might have, but for the grain or food products of the earth, they did not think anything of it. . .[127]

One might suppose that Macoun had experienced a similarly unappreciative attitude, and had been misled by it; as Butler, technically at least no ecologist, was decidedly *not*. But where in all this is Macoun—the incessant questioner, the tireless investigator, the publicist who had lavished his enthusiasm on region after region, including this very one? I quote his words:

> North of the Saskatchewan is a fine country, commencing a little east of Prince Albert, and extending westerly to Lac St. Ann's [Ste Anne], fifty miles west of Edmonton. Owing to the southern bend of the river this tract varies in width from forty to one hundred miles. Throughout the whole of it the soil is warm, containing both sand and gravel, but, nevertheless, is generally rich and very fertile. It has likewise a southern aspect, and will therefore be free from frost in summer.[128]

The reader will note the virtual identity of this description with that of John McDougall, given above. To those unfamiliar with the area, it would scarcely be supposed from Macoun's notice of Edmonton that it lay within this very tract. Furthermore, Macoun himself had noted wheat at Edmonton in 1872, in what was officially a Government report.[129]

Against this we may cite Milton and Cheadle (1863–1865), mentioning what was possibly local

ibid., 17: 399–412 (1936), and *The Birth of Western Canada* (London, 1936), 179, 246.

[123] Milton and Cheadle, *North-West Passage by Land*, 179.

[124] Butler, "Report" in *Great Lone Land* (17th ed. London, 1910), app., 381.

[125] Macoun, *Manitoba*, 112. Contrast Dr. G. M. Dawson, 1879: ". . . in the whole district surrounding Fort Saskatchewan and Edmonton, we now know from actual and repeated experiment that wheat and all other ordinary cereals and vegetables thrive, and yield most abundant crops. The climate in its great diurnal and annual range, corresponds exactly with that of the Peace River country." (*Report*, quoted *in extenso* by Macoun, *ibid.*, 133). In his *Autobiography* (135, 151), the latter says that Dawson "was sent . . . to Peace River, and other parties were sent to examine the Fertile Belt and north of it, to see if they confirmed my reports . . ."

[126] Bryce, *Remarkable History of the Hudson's Bay Company* (Toronto, 1904), 423–429, 452. On the "silence," see also John McLean, *Notes of Twenty-Five Years' Service in the Hudson Bay Territory* (London, 1849), 2: 260–277, 311–322; Bancroft, *History Northwest Coast*, 1511–1886 (San Francisco, 1886), 1: 443–457; Grant, *Ocean to Ocean*, viii, 81–82; Macoun, *Manitoba*, 454, 460, 612; A. H. De Tremaudan, *The Hudson Bay Road* (London, 1912), 128, 192–208, 228, 243, etc.; W. T. R. Preston, *Life of Lord Strathcona* (Toronto, 1916), 51; etc.

[127] Butler, *Autobiography* (London, n.d.), 138. Bryce finds it "puzzling" how "honourable men well acquainted with the country could make such statements. . ." (*Remarkable History*, 476). I doubt if it puzzled many others. Sir Edward Watkin—much of the Simpson school himself—had no such illusions (above, note 8).

[128] Macoun, *Manitoba*, 110. On p. 109, he damns with faint praise the corresponding territory south of the river—"wet and bushy" (whence its luxuriance) "and hence possibly liable to summer frosts." To those who know both sides well, the distinction is surprising; the northern being much more bushy originally than the southern one.

[129] Macoun, in Sandford Fleming, *Explorations and Surveys*, 92.

gossip, since they had no access to the official Minutes of the Company; and also an authoritative later historian, who had. Concerning the decreasing natural food supply of buffalo and fish, the first authors write thus:

> This deficiency has become so urgent, that the Hudson's Bay Company contemplate the immediate establishment of extensive farms in the Saskatchewan district, which is so admirably adapted for agricultural and grazing purposes. . .[130]

Beckles Willson wrote in 1899 concerning this era:

> In the East as in the West [*i.e.* at Red River, Edmonton, and on the Pacific slope], the old policy of procuring provisions and the necessaries of life from England had been abandoned. The Company owned large farms in different parts . . . grist mills, etc. . .[131]

I have commented elsewhere upon what was largely the same body of men seizing eagerly as "empire builders," in their capacity as chiefs of the Canadian Pacific Railway, upon huge areas of the same land which as fur traders they had slandered.[132]

Perhaps even more astonishing in Macoun's case is his attitude toward Father Lacombe's settlement at St. Albert. This is some ten miles northwest from Edmonton; and together with its tributary area may be said to comprise the entire width of the territory in Macoun's description, from the Saskatchewan to the Height of Land northward, whence the waters flow to the Athabaska and Mackenzie River system.

There are numerous allusions to Father Lacombe's area, where he settled in 1858.[133] We have noted that in 1859 the wheat harvest began on August 19.[134] Milton and Cheadle, who were there in June 1863, as his guests, note "rich cornfields" (wheat), and remark that their host was then completing a grist mill of his own erection for grinding the community's flour on the spot.[135] This proceeding indicates a confidence in the district which only tested experience can create in a resident. Yet in Macoun's "formal" description of various settled areas in Western Canada the term "agriculture" is not even mentioned in this instance. St. Albert is "the largest and most prosperous mission settlement in the North-West;"[136] but there is not the least hint in what its prosperity consisted. In another place Macoun quotes from a correspondent of the Toronto *Mail* (1881?), who mentions quite incidentally *one* solitary farmer in the district, without any reference to its pioneer demonstrations in wheat raising for over twenty years prior to that date.[137] This attitude cannot be explained by supposing Macoun's ignorance either of the "home farm" or its surrounding territory. For he had to pass the one, and traverse the other across its entire width on his original journey of 1872 to Fort Assiniboine and Lesser Slave Lake.

Critical examination of Macoun's writings on Western Canada may have made the present writer incurably suspicious.[138] The conclusion, however, seems unavoidable that Edmonton is the *bête noire* (following upon "the Syndicate's" decision to abandon the projected railway route through that place);[139] and "that no good thing could come out of Nazareth!" After leaving Battleford, in the work of 1882 which we are here discussing, Macoun's fervors wane unmistakably.[140] At Edmonton they are *nil*; nor do they revive again until the Edmonton district has been left a sufficiently safe distance behind.

This is not the only instance of these amazing tergiversations. We have noted above Archbishop Taché's account of the excellence of Lac la Biche for wheat culture at an early date. Archbishop Taché was himself, I believe, the founder of the Mission (1850). Both Macoun himself and Marcus Smith, C.E., whom he quotes, emphasize the merits of the region as a wheat-growing area; and the early erection of a grist mill, long before railways were thought of anywhere in the West, reflects

[130] Milton and Cheadle, *North-West Passage by Land*, p. 157.

[131] Beckles Willson, *The Great Company* (Toronto, 1899), 457; see also, M. Bourgeau, *Palliser Journals*, 250; W. T. R. Preston, *Life of Lord Strathcona*, 22–62, 298.

[132] F. G. Roe, "An Unsolved Problem of Canadian History," *Canadian Historical Association Annual Report, 1936*, 65–77. Macoun (who can be severe enough on others' misrepresentations) alludes to this without mentioning any identities (*Manitoba*, 454). The credit for doing this in so many words belongs (I believe) to Preston, *Life of Strathcona*, 22–62, 298.

[133] Macoun, *Manitoba*, 114; also above, note 71.

[134] Katherine Hughes, *Life of Father Lacombe*, 75.

[135] Milton and Cheadle, *North-West Passage*, 181.

[136] Macoun, *Manitoba*, 114–115.

[137] *Ibid.*, 209.

[138] See the present writer's papers cited above, and notes 128, 132.

[139] See F. G. Roe, *Canadian Historical Association, Annual Report, 1936*, 65–77.

[140] There is no mention of agriculture at Victoria, 1872, in Macoun, *Manitoba*, 112.

once again a sound and just confidence in the minds of experienced residents.[141] Yet in 1868, while the resumption by the Crown of the Hudson's Bay Company's title to the North-West was merely under discussion, Archbishop Taché wrote in his *Sketch of the North-West*:

> For my own part, as there are extremely great difficulties in the way of colonizing *the few points in this vast territory capable of cultivation*, I acknowledge frankly that I would as soon—perhaps preferably—see the country remain as it is as see it change, if the changes are to be such, as it appears to me, they would inevitably be. . .[142]

I am unaware to what extent Macoun was cognizant of the early agricultural history of the Northland. Most of the published works containing such information had not appeared in 1882. He may have known of Franklin's allusion to agriculture at Fort Chipewyan in 1827;[143] but his notes on the earlier history at most points appear to have been gathered by himself or other contemporary inquirers on the spot.

The Northerners at Fort Chipewyan were less reticent than Butler's acquaintances. Macoun writes: "In conversation with the men at Chipewyan, I found they raised wheat as far down the Mackenzie as Fort Simpson in latitude 62°, and up the Liard to 61°; and at Winnipeg in latitude 50° conditions were apparently not so good as the conditions I found on the lower Peace River. . . ."[144]

Elsewhere, he cites Chief Factor Hardisty of Fort Simpson as personally informing him that "barley always ripened there and that wheat was sure four times in five."[145] He further mentions that barley had been—apparently for years—successfully grown as far north as 66° N; which must presumably signify at Fort Norman (65°); and also on the "Youcon" (Yukon).[146] The last is in about 62°30′ at Fort Selkirk; after which the river turns north and northwestward, crossing the Alaska boundary about 64°30′.

There are some interesting references to Peace River points from Fort St. John downward. At that place (c. 121° W, 56°N), where oats and barley both stood "nearly five feet high," both were ripe about August 12th in 1875.[147] Wheat there is not mentioned; but at Hudson's Hope, thirty miles up the river, wheat was "flourishing" when seen in July; but was cut down by frost, September 8, 1875. In 1874, there was no frost at Hudson's Hope from May 1 to September 15.[148] At Dunvegan, ninety-five miles below Fort St. John, wheat was being harvested, August 31, 1879, despite a wet season and a cool and cloudy latter half of August.[149] Farther down at Fort Vermilion (58° N, 116° W; almost at the most northerly point on the Peace), barley was cut on August 6, and wheat was ripe August 12, 1875.[150] At the French Mission, two miles from Chipewyan, where the Peace enters Lake Athabaska (59° N, 111° W), Macoun obtained a sample of wheat which won the Bronze Medal at the Centennial Exhibition in Philadelphia in 1876.[151]

In relation to the frost above mentioned, Dr. G. M. Dawson gives an account of two frosts in August (13, 20) in 1879:

> These frosts occurred in very fine weather, following a

[141] Macoun, *Manitoba*, p. 111.

[142] *Ibid.*, 454. Taché told G. M. Grant in 1872 that the Fertile Belt "must have been so called because it is not fertile" (*Ocean to Ocean*, 81–82). In 1861, however, in one of the abortive negotiations prior to the Surrender of 1870, Governor Berens burst out: "What! Take away the fertile lands where our buffaloes feed!" (Watkin, *Canada and the States*, 120, 125; B. Willson, *Great Company*, 474; Bryce, *Remarkable History*, 450). According to Macoun, (*Manitoba*, 453–454, 460, 612; *Autobiography*, 132, 156, 163, 164), it was *Palliser's Report*, and Taché's statements (arising from a desire to keep the country for "his people," the half-breeds) that turned Premier Mackenzie and the Liberal Government against the Canadian Northwest. See also Bryce, *Remarkable History*, 455, 469; Preston, *Life of Strathcona*, 34; C. M. MacInnes, *In the Shadow of the Rockies* (Hist. of Southern Alberta; London, 1930), 59.

[143] Sir John Franklin, *Second Journey to the . . . Polar Sea* (London, 1828), 307.

[144] Macoun, *Autobiography*, 132. Fort Liard (61°) had the warmest summer climate in the Northland (*ex inf.* H. B. Co's officers). Macoun, *Manitoba*, p. 139, 210. See Blodgett, etc., on the North (*ibid.*, p. 141–176), showing Fort Simpson, 62°N, to be warmer, 1876, than Fort MacLeod, Alberta, 50°N, 113°W. Richardson noted that Edmonton had milder winters than Cumberland House. (*Arctic Expedition of 1847-1850*, App., 393). See also Hind, *Report 1858*, 122, 124; C. R. Tuttle, *Our Northland, 1885*, 392–419.

[145] Macoun, *Manitoba*, 139.

[146] *Ibid.*, 139, 217.

[147] Report of Dr. G. M. Dawson in *ibid.*, 128.

[148] *Ibid.*, 128. But why frost in *September* as the destroyer, if everything ripened in August?

[149] *Ibid.*, 127, 133; three frosts previous to Aug. 31 in 1879.

[150] *Ibid.*, 146, 210.

[151] *Ibid.*, 138, 198, 210; Macoun, *Autobiography*, 113, 117.

day of strong westerly wind, the result of which is to remove from the surface of the earth the whole of the lower heated layer of the atmosphere. This, succeeded by a calm and cloudless night with transparent sky, causes the thermometer to sink below freezing point before morning. When not preceded by strong wind, mere transparency of the atmosphere seems seldom or never to lead to frost in August, as many beautifully starlight nights, without an approach of the mercury to freezing point, were observed.[152]

That is an exact description of the condition to which I alluded at the outset of the present essay. Our final reference to wheat concerns Lesser Slave Lake post (approx. 56° N, 117° W). Macoun states that

vegetables in abundance are raised at the Post, and wheat and barley grow well but are seldom sown. Barley ripened here on August 12th, 1872, while at Edmonton the same year it did not mature until the 26th of that month.[153]

I have not attempted any discussion on the ripening of corn (maize) in the territory under review. Even in very long frost-free areas, duration of sunlight and of high temperature is a vital factor. Blodgett, the eminent American climatologist of the mid-nineteenth century, considered that "Indian corn may be grown on both sides of the Saskatchewan. . . ."[154] This has no doubt been done in some years; but I am convinced that for *ripe* corn this generalization is too sweeping.[155] Dawson, in 1879, considered ripening "improbable" on Peace River.[156] Macoun says (1879) that at Qu'Appelle "from time immemorial Indian corn has been grown in the valley;" but he points out that the valley of the Qu'Appelle is from twelve to twenty days earlier than the Saskatchewan Valley.[157] We have some figures on corn purchased at Red River by the Hudson's Bay Company (1825–1833, etc.); but whatever the future may bring forth, the Canadian West has never historically ranked as a corn country.[158]

In the writer's opinion, the foregoing data furnish no historical support to any supposition of climatic *change* within the last two centuries or so in any really relevant sense of the term; certainly not over an area sufficiently extensive to effect much more than a slightly lengthened growing season. This, moreover, is subject even yet to occasional exceptions which, even if we classify them as being purely exceptional and abnormal,[159] might possibly be defined as cases of reversion to earlier meteorological type. Such exceptions, for the period of their occurrence at least, bring the conception of change into serious question. Probably in point of occurrence, if not of interpretation something of the sort may be true of many temperate lands.

[152] Report of G. M. Dawson, in Macoun, *Manitoba*, 132.

[153] Macoun, *Manitoba*, 127, 137 (G. M. Dawson *et al.*). Butler said (1871): "It will yet be found that there are ten acres of fertile land lying *north* of the North Saskatchewan for every one acre lying south of it. . ." (Butler, "Report," *Great Lone Land*, App., 358).

[154] Cited by Macoun, *Manitoba*, 154.

[155] See above, notes 18, 70.

[156] Macoun, *Manitoba*, 127.

[157] *Ibid.*, 227.

[158] Oliver, *Canadian North-West*, 1: 647, 663, 680; 2: 696; A. S. Morton, *Canadian West*, 662; W. L. Morton, *Canadian Historical Review*, 30: 312–313 (1949).

[159] MacInnes remarks *re* Southern Alberta: ". . . in the early eighties Alberta experienced one of those periods of abundant rainfall, which seem to alternate with dry cycles. . ." (*In the Shadow of the Rockies*, 258). *Ibid.*, 169, he speaks of "a series of dry seasons after 1883." In the central area of Alberta, 1899–1903, inclusive, was a wet cycle, with results to be described. In the same area, the proverbial "June rains" were a failure in 1916, 1919, 1922, 1924, 1926, 1929, 1937, 1939, 1941; which in that region means poor crops. In such years a wet autumn is by no means uncommon. Even the uniformitarian Macoun notes in 1880 a June drought, and September "much wetter than usual" (*Manitoba*, 174, 204); which are ignored in his sweeping generalizations.

NEWS NOTES AND COMMENTS

ILLUSTRATIONS

The use of half-tone illustrations in this issue, the first to appear in *Agricultural History*, is an experiment made possible by the generosity of a member of the Society who made a contribution for this specific purpose.

CANADIAN AGRICULTURAL PROGRAMS

The student of recent agricultural policies will find a bulletin by Marjorie R. Cameron and Frank Shefrin, *Federal Agricultural Assistance Programs, Canada, 1900–1951* (Ottawa, Canada, Department of Agriculture, April 1952, 118 p.), of interest. The bulletin is a factual report on the various programs sponsored in aid of agriculture, including financial assistance to improve agricultural production and marketing, price support programs, and the war and post-war subsidy program. Thus, the economist and historian have a general compilation upon which to base analyses. Such a consolidated report is not yet available on the programs of the United States.

ACTIVITIES OF MEMBERS

William D. Barns of West Virginia University spent part of the summer of 1952 in Washington, D. C., doing research on the agricultural history of West Virginia.

Allen G. Bogue, formerly of the University of Western Ontario, is now at the State University of Iowa.

Elmer Ellis of the University of Missouri is the author of "The Profession of Historian," *Mississippi Valley Historical Review*, 38: 3–20 (June 1951). The paper was presented as the presidential address at the 1951 meeting of the Mississippi Valley Historical Association.

Gilbert C. Fite of the University of Oklahoma is the author of *Mount Rushmore* (Norman, University of Oklahoma Press, 1952).

Wilbur H. Glover, formerly with the State Historical Society of Wisconsin, has been appointed director of the Buffalo Historical Society, Buffalo, N. Y.

Louis Hedin, Rouen, France, who has recently been visiting in the United States, is the author of "Les conditions d'exploitation de la Prairie en Normandie depuis le XIX^{e} siècle," *Annales de Normandie*, January 1951, pp. 45–69.

Donald C. Horton of the U. S. Bureau of the Budget was visiting professor of agricultural economics at the 1952 summer session of the University of Wisconsin.

Salo Jonas, New Haven, Connecticut, has recently been elected an honorary member of the Israeli Veterinary Medical Association.

Walter M. Kollmorgen of the University of Kansas is the author, with George F. Jenks, of "A Geographic Study of Population and Settlement Changes in Sherman County, Kansas, Part I: Rural," Kansas Academy of Science, *Transactions*, 54: 449–494 (December 1951).

George F. Lemmer is on a year's leave of absence from the University of North Dakota in order to work with the Air Force history project of the Department of Defense.

Samuel Liss is the author of "Recruiting Migratory Workers for Seasonal Employment in Agriculture," and, with Arthur M. Ross, of "The Labor Contractor System in Agriculture," both published in U. S. Congress, 82d, 2d Sess., Senate, Committee on Labor and Public Welfare, *Hearings . . . Migratory Labor*, pt. 2 (Washington, U. S. Government Printing Office, 1952).

Joseph C. Robert, formerly of Duke University and a long-time member of the Society, has been named president of Coker College.

Theodore Saloutos is on leave from the University of California at Los Angeles and will spend 1952–53 in Greece on a Fullbright fellowship to make a study of the influence of Greek immigrants returning from the United States on life in Greece.

Hubert G. Schmidt, who was with the American Military Government in Germany for the past two years, has returned to Rutgers University.

Henry C. Taylor, past president of the Society and world-famous agricultural economist, has deposited his papers with the State Historical Society of Wisconsin.

Mildred Throne of the State Historical Society of Iowa is the author of "Southern Iowa Agriculture, 1865–1870," *Iowa Journal of History*, 50: 209–224 (July 1952).

Reynold M. Wik of Mills College spent part of the summer in Dearborn, Michigan, and Washington, D. C., doing research upon Henry Ford's influence on farm life.

BRITISH POLICY AND NATIVE AGRICULTURE IN KENYA AND UGANDA

GARLAND G. PARKER

Department of History, University of Cincinnati

The clash between the United Nations and the Communist powers as well as recent British imperial developments give Africa dramatic significance today. Africa's strategic advantages and her potential ability to supply food, raw materials, markets, and man power are vital to the western nations. Indeed, in comparison with other continents, Africa is the last great frontier for economic pioneering. Thus, a study of British policy and native agriculture in two important East African dependencies may have current and historical significance.[1] After brief factual references to Kenya and Uganda, an examination will be made of British native policy in general, specific developments in each of the dependencies, and some problems and policies common to both areas. Space limitations preclude treatment of some related topics such as transportation and trade.

The Kenya-Uganda territories, astride the equator, present diverse geographical and climatic features which have done much to limit British policy and native agriculture. The Kenya Highlands and the Mount Elgon and Ruwenzori massifs in Uganda are about the only areas in these latitudes suited to white colonization.[2] Some 10,000,000 Africans and 37,000 Europeans dwell in the two dependencies which are just a bit smaller than Texas and Oklahoma combined.[3] Britain acquired the Uganda Protectorate in 1894 and the East Africa territory which later became Kenya Colony and Protectorate in 1895.[4]

A discussion of British native policy in general will provide a background for a description of of developments in each dependency. Though official attention was early and continuously given to native production in Uganda, the support for it in Kenya was only spasmodic until the 1920s.[5] Since 1923 the imperial government has pledged itself not to subordinate native African interests to those of any other race.[6] In 1925 an official commission suggested that economic advance could only come with the increased use of the hoe and the plow and that it was the government's clear duty to ". . . develop agricultural efficiency in the native areas. . . ."[7] In 1929 the Hilton Young Commission stated that the native should be given every chance ". . . to develop his own economic opportunities which . . . are confined practically to agricultural opportunities."[8] Lord

[1] This article was presented before the joint session of the Agricultural History Society and the Mississippi Valley Historical Association at Cincinnati, Ohio, on Apr. 19, 1951. For an appraisal of the potential partnership between Africa and the West, see Elspeth Huxley, "Tomorrow's Hope or Yesterday's Dream," *New York Times Magazine*, June 4, 1950, p. 12–13, 36–38, 42.

[2] Colonial Kenya, *Annual Report, 1948* (London, 1950), 86–87; Colonial Uganda, *Annual Report, 1949* (London, 1950), 86–88; H. B. Thomas and Robert Scott, *Uganda* (London, 1935), 50–51. For an interesting recent comparison of geography and agriculture in Kenya-Uganda and the southeastern United States, see A. N. Duckham, "American 'Know-How' and Kenya-Uganda Farming," *East Africa Agricultural Journal*, 16:9–15 (July 1950).

[3] Uganda, *Annual Report, 1949*, 17, 86–88; Kenya, *Annual Report, 1948*, 10, 86; "The British Territories in East and Central Africa, 1949–50," Cmd. 7987, *British Parliamentary Papers* (London, 1950), 3 (hereafter cited as P.P., by session date, and by volume where the information is based on a set of papers bearing volume numbers).

[4] Uganda, *Annual Report, 1949*, 89; Kenya, *Annual Report, 1948*, 88. For an extended discussion of the historical, geographical, and ethnic background as well as a treatment of British policy in all its main aspects, see Garland G. Parker, British Native Policy in Kenya and Uganda, 1885–1939 (unpublished Ph.D. thesis, University of Wisconsin, 1948).

[5] Sir Alan Pim, *The Financial and Economic History of the Tropical African Territories* (Oxford, 1940), 113–115.

[6] "Indians in Kenya," Cmd. 1922, P.P., 1923, 18:10; "Correspondence Arising from the Report of the Joint Select Committee on Closer Union in East Africa," Cmd. 4141, P.P., 1931–32, 18:52. Hansard, *Parliamentary Debates*, s. 5, 456:868–869 (hereafter cited as Hansard).

[7] "Report of the East Africa Commission," Cmd. 2387, P.P., 1924–25, 19: 32, 23, 36.

[8] "Report of the Commission on Closer Union of the Dependencies in Eastern and Central Africa, January 1929," Cmd. 3234, P.P., 1928–29, 5:58.

Passfield, the secretary of state for the colonies, announced in 1930 that "... the main objective to be kept in view is the improvement of the general condition of the natives by encouraging them to make the most efficient use of their own resources for purposes of production...." He opposed any restrictions on native production of a given crop and held that government services, training, transport, and marketing facilities should be provided on an equal basis to all groups.[9] His recommendations have continued to serve as the basis of policy since then.

The Colonial Development and Welfare Program inaugurated in 1940 is one of the most commendable aspects of current British policy. Antecedents of this program were the grants-in-aid and loans in the early years for the development of trade and transport facilities which indirectly stimulated native production.[10] In 1929 grants up to £1,000,000 per year were authorized for projects "likely to develop agriculture and industry for the colonies."[11] Later, as a result of the Colonial Development and Welfare Acts of 1940, 1945, and 1950, £140,000,000 was made available for colonial grants generally in the 1946–1956 period.[12] Kenya and Uganda both have ten-year development plans in progress which are financed in part by such grants. Increased agricultural activity is a leading objective of these plans.[13] Unfortunately the British have not been able to implement these policies fully, as an examination of specific developments in the dependencies will reveal.[14]

In Uganda a unique land policy accounts for a development much different from that in Kenya. As early as 1904 the East Africa Commissioner wrote that he did not think "... Uganda will ever be a white man's country ...," but that its development "... will be by native agency under European supervision and with the help of European capital ...," and so it has been.[15] Some large estates sanctioned by the Uganda Agreement of 1900 still exist, but in general the protectorate has been committed to a policy of development by native agency, and emphasis has been on the small peasant holding system. In 1931 only 106 European settlers were engaged in agriculture; today there are in Uganda fewer than 7,500 Europeans, and they hold relatively little land. Indeed, in a recent publication edited by J. K. Matheson and E. W. Bovill, authorities on East Africa, it is estimated that only about 50 settlers are currently engaged in agriculture; all nonnatives in Uganda cultivate only 65,000 acres while the Africans till 5,500,000 acres.[16]

Though many tribes in the north and west are pastoral, the significant developments in Uganda pertain to farming. Even in the early years of British rule, the administration encouraged agriculture, and in 1900 a hut tax requiring those unable to pay taxes in cash to give a month's labor to the government stimulated agrarian activity. The chiefs were urged to impress upon their people the importance of agriculture.[17]

[9] "Memorandum on Native Policy in East Africa," Cmd. 3573, P.P., 1929–30, p. 8.

[10] For information on this early aid in East Africa, see *British and Foreign State Papers*, 108: 20–22; "Palestine and East Africa Loans: Memorandum Explaining the Financial Resolution," Cmd. 2696, P.P., 1926, 23:23; "Report of the East Africa Guaranteed Loan Committee, 1926–29," Cmd. 3494, P.P., 1928–30, 8:3.

[11] For information on the 1929 Colonial Development Fund and its operation, see William Lord Hailey, *The Future of Colonial Peoples* (Princeton, 1944), 52, and *Britain and Her Dependencies* (London, 1943), 15; W. K. Hancock, *Argument for Empire* (New York, 1943), 119; Edward M. Falk, "Colonial Development and Welfare Work is in Progress," *West African Review*, 14:19 (Apr. 1943); "Statement of Policy on Colonial, Development and Welfare, Feb. 1940," Cmd. 6175, P.P., 1939–40, p. 5.

[12] Cmd. 7987, P.P., 1950, p. 44; "Parliament," *Corona*, Jan. 1951, p. 6.

[13] Cmd. 7987, P.P., 1950, p. 44–47; "The Colonial Empire 1947–48," Cmd. 7433, P.P., 1947–48, p. 95; "The Colonial Empire (1939–47)," Cmd. 7167, P.P., 1946–47, p. 72, 87.

[14] For a more intensive discussion of general policy, see Garland G. Parker, "A Summary of British Native Policy in Kenya and Uganda, 1885–1939," *Journal of Negro Education*, 19:439–448 (Fall 1950).

[15] "General Report on the Uganda Protectorate for the Year Ending March 31, 1904," Cd. 2250, P.P., 1905, 56:28. For a similar reaction from the Uganda governor in 1907, see Sir Henry Hesketh J. Bell, *Glimpses of a Governor's Life* (London, 1947), 159–160. See also Sir Alan Pim, *Colonial Agricultural Production* (London, 1946), 157–158; G. B. Masefield, *A Short History of Agriculture in the British Colonies* (Oxford, 1950), 24–25; and J. K. Matheson and E. W. Bovill, *East African Agriculture* (London, 1950), 15–16.

[16] Cmd. 7987, P.P., 1950, p. 8; Hansard, s. 5, 456: 865–866; Matheson and Bovill, *East African Agriculture*, 25, 227. For a thorough study of agricultural development in Uganda to 1940, see J. D. Tothill, ed., *Agriculture in Uganda* (London, 1940).

[17] "Report on Uganda for 1904–05," Cd. 2684–13, P.P., 1906, 75:13–14. For a view of early subsistence

Government departments for agriculture, cotton affairs, and veterinary work appeared early in the century,[18] and attention soon was given to agricultural experimentation and improved cultivation methods.[19] Since the late 1930s considerable emphasis has been placed upon the training of native agricultural assistants, similar to county agents in the United States, and school teachers. Makerere College at Kampala, the native schools, and the department of agriculture all try to spread agricultural knowledge.[20]

The Uganda cotton industry offers the best basis for an appraisal of British agricultural policy. In 1902 the British Cotton Growing Association was formed, and it turned to Uganda as a likely area for empire cotton production. With colonial office approval, administrators emphasized to the chiefs the importance of cotton production and the need of urging their people to raise cotton.[21] A high-grade long-staple cotton was introduced. Cotton growing has since become the cornerstone of Uganda's economic system. Production increased from 500 bales in 1906 to 392,000 in 1948–49,[22] and acreage rose from about 92,000 acres in 1916 to 1,500,000 in 1949–50. Yields run from an average of about 475 pounds of seed cotton per acre in the Buganda province to around 300 pounds in other cotton areas.[23] Uganda is now the leading British colonial cotton producer.[24] The industry has been closely supervised in order to maintain and improve the quality of the cotton. Native growers have been aided in various ways. They have been given free seed; experiment stations have been established; and the natives have been taught better methods of cultivation and insect control.[25] Government pressure by 1925 gave the Africans the choice of raising cotton, working for the government, or working for the settlers. The East Africa Commission made it clear, however, that the natives were not to be allowed ". . . to do nothing, and be of no use to themselves or the country." The Africans generally construed the government's wish for them to grow cotton as an order.[26] Recently special attention has been given to cotton production, the organization of the industry, and to growing a type of cotton more suitable for the requirements of the Lancashire mills.[27]

Tobacco is the next most important cash crop in Uganda; its growth is closely supervised, and it is raised almost exclusively by natives. Until 1919 coffee was largely an European settler crop, but since then native production has been encouraged.[28] The plantain or cooking banana is the most important food crop and article of diet in the southern part of the colony, but it is not important commercially.[29] Among other important products are maize, sorghum, millet, peanuts,

agriculture in Uganda as well as later developments to 1930, see Earl C. Case, "Agriculture and Commerce of Uganda," *Economic Geography*, 6: 352–363 (Oct. 1930).

[18] "Report on Uganda for 1904–05," Cd. 2684–13, P.P., 1906, 75:13–14; "Report on the Botanical, Forestry, and Scientific Department for the Year Ended 31st March, 1909 [Uganda]," Cd. 4972, 1910, 65:3.

[19] "Report on Uganda for 1912–13," Cd. 7050–28, P.P., 1914, 58:9; "Report on Uganda for 1917–18," Cmd. 1–16, P.P., 1919, 35:4; Masefield, *Agriculture in the British Colonies*, 68.

[20] William Lord Hailey, *An African Survey* (London, 1938), 967; Hansard, s. 5, 432:367; Uganda, *Annual Report, 1949*, 7.

[21] "Memorandum on the Subject of Government Action in Encouragement of Cotton-Growing in Crown Colonies," Cd. 5215, P.P., 1910, 66:3–6. See also Masefield, *Agriculture in the British Colonies*, 85–88.

[22] Uganda, *Annual Report, 1949*, 7, 90; Hailey, *Survey*, 904; Pim, *Economic History*, 122–123; Matheson and Bovill, *East African Agriculture*, 228–229.

[23] "Uganda Report for 1915–16," Cd. 8434–1, P.P., 1917–18, 22:7; Uganda, *Annual Report, 1949*, 36; Matheson and Bovill, *East African Agriculture*, 228–229.

[24] British Information Services, *The British Colonies in 1949* (I. D. 963, New York, 1950), 22; Albert Q. Maisel, *Africa, Facts and Forecasts* (New York, 1943), 196.

[25] "Report on the Introduction and Establishment of the Cotton Industry in the Uganda Protectorate," Cd. 4920, P.P., 1909, 59:2; "Report on Uganda for 1907–08," Cd. 4448–9, P.P., 1909, 58:4; Cd. 5215, P.P., 1910, 66:3–6; "Uganda. Report for 1908–09," Cd. 4964–10, P.P., 1910, 64:16. "British Cotton Cultivation," Cd. 3794, P.P., 1908, 70:15.

[26] Cmd. 2387, P.P., 1924–25, 9:34, 136, 142.

[27] Cmd. 7433, P.P., 1947–48, p. 72; Hansard, s. 5, 444:1962–3; British Information Services, *Brief Notes on the Resources of the British Colonies* (I. D. 1004, New York, 1950), 2.

[28] Hailey, *Survey*, 916; Pim, *Economic History*, 126–7; Cmd. 7987, P.P., 1950, p. 83, 79.

[29] Cmd. 2387, P.P., 1924–25, 9:140; Hailey, *Survey*, 901. The sweet banana is sometimes grown on a small scale around the urban areas for sale to the non-native population. Matheson and Bovill, *East African Agriculture*, 233.

and vegetables.[30] About 90 percent of Uganda exports are native in origin. Such is the story of Uganda development.

In many respects British policy in Kenya has been at variance with that in Uganda and often to the detriment of the Kenya Africans. Land and settler policies are good examples. In 1902 and thereafter, efforts, though opposed by some administrators, were made to entice British settlers to the Kenya Highlands.[31] It should be noted that vast stretches of the highlands were then almost devoid of Africans, because of a shifting pasture system and raids by the Masai warriors; thus, a promising land with apparently fertile soil and a temperate climate seemed to invite settlers. It was also argued that the presence of Europeans would render the natives more progressive by example.[32] Trouble arose when Africans came forward to claim the apparently empty lands. The good land was finally divided between settlers and natives; certain areas were earmarked for Europeans, and a system of reserves was arranged for the natives.[33] Despite later adjustments in Kenya, about 15,000 square miles are now allotted to less than 30,000 Europeans, of whom only about 2,500 are farmers, while 5,000,000 natives have only 52,000 square miles assigned to them. Use of land outside these areas is unrestricted, but little of it is fit for cultivation.[34] It was perhaps inevitable that the desire for such things as cheap land, labor, railways, roads, schools, and the like should tempt European settlers to use their political influence in promotion of their own welfare at African expense.[35]

In Kenya some subsistence agriculture was in progress when the British first appeared,[36] and it has steadily grown in importance. The most important food crops are maize, sorghum, and millet, but some other items produced rather widely for sale or consumption are wheat, tobacco, wattle bark, dairy products, and vegetables.[37]

Among cash crops in Kenya, cotton is exclusively native but of much less importance than in Uganda.[38] Coffee has excited more policy discussions than any other crop. Coffee culture was introduced in Kenya as early as 1905, but native production was discouraged on the grounds that careless cultivation would be conducive to plant disease. In 1925 an imperial commission recommended that native production should be encouraged. Since then it has slowly increased. Even so, the value of native-grown coffee in 1946 was only £4,800.[39] By a license system all coffee growers

[30] Other products are sesame, sweet potatoes, beans, cassava, chillies, flax, and hides and skins. *Ibid.*; Cmd. 7987, P.P., 1950, p. 77–9, 83; Pim, *Economic History*, 127; Cmd. 2387, P.P., 1924–25, 9:154.

[31] "Report on the East Africa Protectorate, June 1903," Cd. 1626, P.P., 1903, 45:18; Pim, *Economic History*, 109–10; Norman Leys, *Kenya* (London, 1926), 93; H. R. A. Philp, *A New Day in Kenya* (London, 1936), 149–150; Masefield, *Agriculture in the British Colonies*, 98–99.

[32] Elspeth Huxley, *White Man's Country, Lord Delamere and the Making of Kenya* (London, 1935), 1:70; "Report by Sir A. Hardinge on the Conditions and Progress of the East Africa Protectorate from its Establishment to the 20th July, 1897," C. 8683, P.P., 1898, 60:62; Margery Perham, *Africans and British Rule* (London, 1941), 78–80; Masefield, *Agriculture in the British Colonies*, 24–25.

[33] Colony and Protectorate of Kenya, *The Agrarian Problem in Kenya, Note by Sir Philip Mitchell, Governor of Kenya* (Nairobi, 1947), 8–14; Pim, *Economic History*, 112; Cmd. 7987, P.P., 1950, p. 3–4. For an extended treatment of Kenya-Uganda land policy, see Parker, British Native Policy, 320–382.

[34] Figures for land and population in East Africa vary with almost every authority consulted. The figures above are presented by the Governor of Kenya. See Colony and Protectorate of Kenya, *The Agrarian Problem in Kenya*, 38. For the most exhaustive treatment of the land problem, see "Report of the Kenya Land Commission, September, 1933," Cmd. 4556, P.P., 1933–34, 10:1–535. See also, L. P. Mair, *Native Policies in Africa* (London, 1936), 87–89; Edwin W. Smith, "Land in Kenya," African Society, *Journal*, (July 1936) 35:246–247; "The Colonial Empire in 1937–38," Cmd. 5760, P.P., 1937–38, p. 56–7; "The Colonial Empire (1938–39)," Cmd. 6023, P.P., 1938–39, p. 73; Masefield, *Agriculture in the British Colonies*, 104, 106.

[35] Perham, *Africans and British Rule*, 79–80.

[36] Earl C. Case, "The Pastoral and Agricultural Industries of Kenya Colony and Protectorate," *Economic Geography*, 6:247 (July 1930).

[37] Among these crops and products are also rice, chillies, copra, flowers, fruit, eggs, sugar cane, beans, peas, cassava, peanuts, sesame, and ghee. Ghee is a clarified butter made from the milk of goats, sheep, or cows. Cmd. 7987, P.P., 1950, p. 76–79, 90; Kenya, *Annual Report, 1948*, 36–37; Hansard, s. 5, 447:229–230.

[38] Cmd. 2387, P.P., 1924–25, 9:33–34; Hailey, *Survey*, 903; Pim, *Economic History*, 119; Cmd. 7987, P.P., 1950, p. 80.

[39] Cmd. 2387, P.P., 1924–25, 9:33–36; Hailey, *Survey*, 386, 910; Max Salvadori, *La colonisation Européene au Kenya* (Paris, 1938), 204; Norman Leys, *The Colour Bar in East Africa* (London, 1941), 76–77; Kenya Colony and Protectorate, Department of Agriculture,

are required to follow proper cultivation, processing, and disease control methods.[40]

Governmental encouragement of native agricultural production has been much less vigorous in Kenya than in Uganda, largely because of settler influences. Not until 1922 did the agricultural department begin active promotion of African agriculture, and it was only in 1925 that imperial endorsement was given to such a development program. In the early years, government funds and energies were largely expended on European agriculture.[41] In the late twenties and in the thirties, attention to the native reserves was increased, government services were greatly expanded, and the agricultural staff was augmented.[42] As late as 1932, however, a disproportionate share of government funds was spent on nonnative services, although this fact was decried by an imperial financial commissioner, Lord Moyne.[43] In recent years agricultural services and education have been steadily developed in Kenya. But it is a curious thing that few educated Africans elect agricultural training.[44]

It has generally been assumed that the African's level of education, lack of farming knowledge, and inability to appreciate external factors render him incapable of planning his agricultural economy successfully; therefore, the government dictates farming policy to the African natives. Food production, soil conservation, adequate nutrition, and enough commercial crops to allow Africans to meet their cash requirements are points of emphasis in this policy. After 25 years of experience agricultural officials believe also that "these objectives cannot be achieved without direct pressure for the use of improved methods and practices."[45]

Pastoral pursuits are much more important in Kenya than in Uganda, but the importance of livestock in tribal society is very great in all East Africa. Goats, sheep, and cattle are measures of social status; they are inherited as family possessions and are used for wife purchases and as guarantees for a woman's good behavior on her marriage.[46] Indeed, in view of a developing black market, the Uganda government recently found it necessary to stabilize the bride price at 5 goats, 5 head of cattle, and 20 shillings ($2.80).[47] Cattle, in fact, are currency; they are used to settle disputes and are seldom killed or sold. Some tribes permit the stock to live in their huts and give them family names. Animal fertilizer is wasted, and scientific breeding is rarely practiced. The beasts are usually in poor condition and are worth little as meat.[48] In fact, many East African natives are not meat eaters. Some tribes do relish blood as an item of diet; they shoot an arrow into an animal's neck, drain the blood into a calabash or gourd, and consume it either raw or mixed with milk.[49]

Such native attitudes have, of course, hindered pastoral progress. Prior to 1909 the Kenya animal husbandry department was primarily concerned with the settlers' cattle problems, and the native cattle industry was neglected.[50] Since then veterinary services and research have been emphasized,[51] and today each East African dependency has improvement schemes and demonstration farms in operation. Progress, however, is slow and must wait upon selective breeding, a better water supply, fences, education, and native cooperation.[52]

British rule should also be viewed against a background of certain problems and policies com-

Annual Report, 1946 (Nairobi, 1948), 7; Masefield, *Agriculture in the British Colonies*, 102.

[40] Kenya, *Annual Report, 1948*, 36; Hansard, s. 5, 447:229–30.

[41] Cmd. 2387, P.P., 1924–25, 9:156, 167–168; Huxley, *White Man's Country*, 2:96.

[42] *Ibid.*, 96; Hailey, *Survey*, 966; Cmd. 2387, P.P., 1924–25, 9:35; Cmd. 3234, 1928–29, 5:62.

[43] "Report by the Financial Commissioner (Lord Moyne) on Certain Questions in Kenya, May, 1932," Cmd. 4093, P.P., 1931–32, 6:34–35.

[44] Hailey, *Survey*, 964–965; Kenya, *Annual Report, 1948*, 92; Colony and Protectorate of Kenya, Department of Agriculture, *Annual Report, 1945* (Nairobi, 1946), 23.

[45] *Ibid.*, 20–22.

[46] Hailey, *Survey*, 882; Matheson and Bovill, *East African Agriculture*, 215, 233–234.

[47] *Cincinnati Enquirer*, Feb. 21, 1951, p. 2.

[48] Hailey, *Survey*, 882; John Smith, "Livestock Development," *Corona*, Oct. 1949, p. 10–12.

[49] The arrow is equipped with a stop or guard which prevents excessive penetration. Cmd. 2387, P.P., 1924–1925, 9:26–27; Leys, *Kenya*, 102–103; "Report on the Mombasa-Victoria-Lake Railway Survey," C. 7025, P.P., 1893–1894, 62:83. See also C. G. Seligman, *Races of Africa* (London, 1939), 217; and Lord Cranworth, *A Colony in the Making, On Sport and Profit in East Africa* (London, 1912), 30–31.

[50] Cmd. 2387, P.P., 1924–1925, 9:156.

[51] Cmd. 4093, P.P., 1931–1932, 6:35; Hailey, *Survey*, 987.

[52] Cmd. 7987, P.P., 1950, p. 90; John Smith, *Corona*, Oct. 1949, p. 12; Masefield, *Agriculture in the British Colonies*, 134–135.

mon to both East African dependencies. For example, the tendency of the population to increase by more than 2 percent per year is alarming in a land already perplexed by a scarcity of food and water. The opening of new production areas, increased yields on the present ones, and stabilization of the population by birth control are possible solutions, but aside from some resettlement no answer to the problem has as yet been found.[53]

The peace and order provided by British rule have contributed to a phenomenal increase in the livestock owned by natives without a parallel increase in grazing lands; the result has been a vicious cycle of overgrazing, decreasing water supplies, and erosion. Education, erection of processing plants, encouraging and even compelling the Africans to sell surplus cattle have been tried by the colonial governments, but the problem of overstocking is still very serious.[54]

Soil erosion is one of East Africa's most perplexing problems.[55] Though government policies are scientific and up-to-date, progress toward soil conservation is impeded by shortages of personnel, training facilities, and machinery, but there are even more serious obstacles.[56] The communal system of African land tenures, the appalling ignorance and conservatism of native women who are the cultivators, and a peculiar native apathy all interpose great obstacles to erosion control.[57] Indeed, the question of native incentive generally is one of the greatest of East African problems. If that area is to progress, the Africans must somehow be persuaded to work longer, harder, and more regularly than in the past. Whether this can be done in a tropical land is open to debate.[58]

Currently the governments of Britain's East African colonies give much attention to special development projects which involve reclamation of denuded areas, resettlement on previously unused land, improved farming methods in settled regions, and group farming experiments. Likewise, the conservation of water resources is being approached by drilling boreholes for native use and by constructing dams and reservoirs.[59]

The tsetse fly is the most formidable enemy of agricultural development. The ravages of the fly-carried diseases, sleeping sickness in men and nagana in animals, have reduced vast stretches of East Africa to wildernesses of uninhabitable bush. Driving back the game, bush clearance, resettlement, and the use of drugs are the usual means of fighting the menace.[60] Antrycide was

[53] Elspeth Huxley, "Must Africa Starve," *Corona*, Nov. 1949, p. 15–17; "... As a Man's Hand," *ibid.*, May 1949, p. 3–4; Hansard, s. 5, 461:1467–1469; Colony and Protectorate of Kenya, *Report on Native Affairs, 1939–1945* (London, 1948), 37, 54; Masefield, *Agriculture in the British Colonies*, 75–76; Matheson and Bovill, *East African Agriculture*, 215–216.

[54] Hailey, *Survey*, 811, 816; Cmd. 2387, P.P., 1924–1925, 9:32; Cmd. 4093, P.P., 1931–1932, 6:15; Huxley, *White Man's Country* 2:244–247; Leys, *The Colour Bar in East Africa*, 47; Cmd. 7987, P.P., 1950, p. 91; Masefield, *Agriculture in the British Colonies*, 140–141. See also L. S. B. Leakey, "Some Problems Arising from the Part Played by Goats and Sheep in the Social Life of the Kikuyu," African Society, *Journal*, 33:70–79 (Jan. 1934); John Smith, *Corona*, Oct. 1949, p. 10–12; "Dust Bowls of the Empire," *Round Table*, 29:349 (Mar. 1939).

[55] For details regarding the causes and extent of erosion, see "The Soil of East Africa," *Round Table*, no. 161, p. 59 (Dec. 1950); Sir Harold Tempany, "Soil Erosion, A Commonwealth Problem," *Corona*, Sep. 1949, p. 3–6; "Dust Bowls of the Empire," *Round Table*, 29:349–350 (Mar. 1939); Hansard, s. 5, 461:1465–1466; Cmd. 7987, P.P., 1950, 72; Kenya, *Report on Native Affairs, 1939–45*, 36–37; William Vogt, *Road to Survival* (New York, 1948), 256–258.

[56] Kenya, Department of Agriculture, *Annual Report, 1946*, 102–105; "Parliament," *Corona*, Apr. 1949, p. 7; British Information Services, *The British Colonies in 1949*, 23; Hansard, s. 5, 461:1471–1473; "Dust Bowls of the Empire," *Round Table*, 29:351 (Mar. 1939); Cmd. 7987, P.P., 1950, p. 72–73. See also Masefield, *Agriculture in the British Colonies*, 75–84.

[57] Huxley, *Corona*, Nov. 1949, p. 16; "Dust Bowls of the Empire," *Round Table*, 29:350 (Mar. 1939); Cmd. 7987, P.P., 1950, p. 73; "The Soil of East Africa," *Round Table*, no. 161, p. 62 (Dec. 1950); Hansard, s. 5, 459:1595–1596; Kenya, Department of Agriculture, *Annual Report, 1946*, 17.

[58] Huxley, *Corona*, Nov. 1949, p. 17; Cmd. 7987, P.P., 1950, p. 139. Matheson and Bovill, *East African Agriculture*, 52–55. For an interesting comparison of African development in Kenya-Uganda and Negro progress in the United States, see Duckham, *East Africa Agricultural Journal*, 16:9–15 (July 1950).

[59] Cmd. 7987, P.P., 1950, p. 49–50, 57–59; Kenya, *Annual Report, 1948*, 7; "The Soil of East Africa," *Round Table*, no. 161, p. 63–64 (Dec. 1950); Matheson and Bovill, *East African Agriculture*, 216.

[60] British Information Services, *From Darkness to Light* (New York, 1949), 6–7; Uganda, *Annual Report, 1949*, 43. For a good account of the tsetse fly problem by a resident of Nairobi, Kenya, see George Kinnear, "War in Africa—on the Tsetse Fly," *New York Times Magazine*, May 29, 1949, p. 12, 18–19.

hailed in 1948 as a cure and prophylactic for cattle diseases caused by the fly, but recent reports have been less optimistic. Resistance to it appears to be acquired rather easily by the flies, and the immunization period is shorter than early experiments indicated.[61] In Africa the fly is still a serious menace for men and beasts.

Marketing procedures have also been a concern of British policy. Governmental control boards, guaranteed prices, price stabilization funds, and native betterment funds supported by the profits of the operations are common features of marketing schemes. In general the controls are necessary and beneficial to the natives, but more concern has been shown for the Africans in Uganda than those in Kenya.[62]

The development of British policy and native agriculture must be appraised with the limiting factors of the East African scene in mind. Geography, disease and insect ravages, lack of funds, staff shortages, population pressure, overstocking, and European settler demands as well as native apathy and ignorance have been and are powerful obstacles to progress. These factors account for many divergences from the commendable policies laid down in imperial pronouncements. Criticisms can be made in respect to landholding, the growth of certain crops, the use of government services, and marketing developments in Kenya. Then, there has been the regrettable, though necessary, pressure exerted to secure African compliance with general agricultural policies in Kenya and with the cotton program in Uganda. Finally, there is the danger today that respect for native interests and institutions may be forgotten in the great development schemes under way which reflect the urgency of the world's needs for African raw materials and products.[63]

Yet, there is much that is laudable in the British record in East Africa. British rule has ended tribal wars, the slave trade and slavery, and has established security of life and property.[64] The British administration has introduced cotton growing, new means for combating diseases of men, animals, and plants, training in animal husbandry, improved agricultural methods, and soil and water conservation. The Africans have been given a chance to work, to augment their income, and to raise their living standards. Schools have been established. Natives are trained for governmental service.

The colonial development program devotes much attention to agriculture. In view of Britain's straitened financial condition, these efforts to improve the lot of the Africans deserve high praise. The obligations of trusteeship, largely because of settler demands, have been less effectively met in Kenya than in Uganda where we have today one of the foremost examples in the world of colonial administration working primarily for the benefit of the indigenous peoples. In fact, when we recall that the 26-year old Kabaka (or king) of the Buganda people in Uganda, a Cambridge graduate, enjoys a daily swim in the same pool where his grandfather tossed his enemies as bait for the crocodiles kept there,[65] we can realize that the progress of a scant fifty years or so of British rule is quite remarkable. The amenities of life and the conditions for civilized living are rapidly gaining ground in "Darkest Africa." Outbreaks of violence in Kenya in 1952 and 1953 indicate, however, that any future progress there will be dependent in large measure upon the amicable adjustment of relations between native Africans and white settlers. That is primarily a political problem, but its solution will be conditioned by the agricultural facts of life treated in this article.

[61] British Information Services, *The British Colonies in 1949*, 39; "Antrycide," *Corona*, Dec. 1950, p. 445.

[62] Cmd. 7987, P.P., 1950, p. 80–88; Kenya, *Annual Report, 1948*, p. 37–39; Hansard, s. 5, 461:351–352; 447:229–?30; Matheson and Bovill, *East African Agriculture*, 224–226. For early attention to marketing in Uganda, see Cmd. 3573, P.P., 1929–30, 23:13; Leys, *A Last Chance in Kenya* (London, 1931), 95. For cotton marketing developments in Uganda, see Masefield, *Agriculture in British Colonies*, 89–90.

[63] Negley Farson, *Last Chance in Africa* (New York, 1950), 16–17.

[64] For a more detailed analysis of the general effects of British policy and rule, see Parker, *Journal of Negro Education*, 19:446–448 (Fall 1950).

[65] *New York Times*, Feb. 4, 1951.

HENRY A. WALLACE'S EDITORIALS ON AGRICULTURAL DISCONTENT, 1921–1928

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Henry Agard Wallace is one of the most controversial figures of our time. Because of his position and policies in the Roosevelt administration and his candidacy for the presidency in 1948 the opinions about Mr. Wallace have been severely polarized. The evaluations made of him have been, for the most part, highly subjective.

The writer feels that the only adequate evaluation which can be made is an objective analysis of the ideas of the man and their sources. We cannot take our basic propositions from personality and hearsay and expect to arrive at any conclusions that will later meet the tests of historical perspective. The writer has attempted to evaluate the views of Henry A. Wallace from a verifiable source in the least controversial period of his life.

Long before Henry Agard Wallace became responsible for the editorial content of *Wallaces' Farmer* on March 4, 1921,[1] it had been one of the major sources of farm thought in Iowa and adjacent parts of the middle west. The paper was founded by Henry Wallace and carried on by his son Henry C. Wallace. It passed under the editorship of Henry Agard Wallace when his father, Henry C. Wallace, became Secretary of Agriculture in the Harding cabinet.

From that time until 1933 when Henry A. Wallace became Secretary of Agriculture in the Roosevelt cabinet, he wrote at least 60 percent of the editorials and approved the remainder.[2] This paper is a study of the views expressed by Henry Wallace in these editorials from the beginning of his editorship until the close of the 1928 presidential campaign. The purpose of this paper is to determine the changing current of thought which Wallace expressed to the farmers of Iowa.

To some extent, it can be said that this paper shows Wallace's changing views. However, the reader will realize that Wallace's editorials expressed the policy of the paper which may well have lagged behind or moved ahead of his personal views. Wallace, like any editor, had to adjust his views in terms of his reading public.

The paper is divided into three sections which seem to the author to be indicative of the change of attitude. These sections are roughly chronological, strict chronology being impossible.

The Early Twenties. Overproduction seemed to be the key problem in the agriculture of the 1920s and Wallace was quick to attack it. To him, the solution was for the individual farmer to exhibit more sense and thus defeat the problem without outside interference.[3] Wallace argued that the corn belt farmer had produced 5 to 10 percent more than normal in a period when business was producing 20 to 25 percent less than normal. This intensified the farm depression, for while business adjusted production in ratio to the price, the farmer did the opposite.[4]

Wallace offered diversification of crops as one of the solutions to the problem. An example of this was his campaign for less corn and more alfalfa. He appealed to Nebraska farmers for this plan on the grounds that it would help them to avoid the freight rates.[5] In 1922 he supported Representative Christopherson's plan which proposed high supports on underproduced products and low supports on overproduced products. This, he wrote, would help to equalize the situation. However, Wallace mentioned this plan editorially only once, and then gave it only nominal support. More important to this paper is the view which Wallace expressed toward the overall problem of stabilization. While Wallace desired a method of raising the farm income he said that there were certain basic fallacies in a government managed price support system.

The obvious danger in all price fixing schemes, of course, is that they provide an incentive for the piling

[1] *Wallaces' Farmer*, Des Moines, Wallace Publishing Co., 46(10):464 (Mar. 11, 1921).

[2] Letter from Donald Murphy, Des Moines, Nov. 13, 1950, and Apr. 24, 1951.

[3] *Wallaces' Farmer*, 46(11):504 (Mar. 18, 1921).

[4] *Ibid.*, 47(1):4 (Jan. 6, 1922).

[5] *Ibid.*, 46(32):1041 (Aug. 12, 1921).

up of huge surpluses which eventually must be disposed of. . . .

. . . It is quite evident that government price fixing, if unaccompanied by some plan for regulation of production, is bound to be a heavy tax on the government and in the end almost certain to ruin the industry it has been trying to save.[6]

Henry Wallace's editorial views were motivated in all things by the conditions prevailing in agriculture. He contended that the farmer was not being given his fair share of the national income and made extensive comparisons between the income of the farmer and the laborer to prove this. He attacked labor openly with only limited objection to the position of capitalists. In June of 1921, Wallace criticized the ideas of Samuel Gompers.

Samuel Gompers, of the American Federation of Labor, pleads for an alliance between the labor unions and the farmers. He says they must come together to keep from being crushed by "captains of industry and princes of finance."

The fact is that the farmers are suffering more now from the leaders of labor than from the leaders of industry or finance. The farmers' wages as measured by the prices of his crops are a third less than during the five-year period, 1911–1914. The working man's wages are from seventy-five to one hundred per cent higher than during that same period. These high wages are keeping up the high cost of living and therefore making stagnation in industry. The freight rates are kept high because the wages of railroad workmen are about one hundred per cent higher than before the war. The farmer is paying a large part of these exorbitantly high wages.

As an evidence of good faith, Mr. Gompers should tell union labor that they should accept lower wages and thus bear their fair share of the cost of readjustment. The farmer is suffering more than anyone else because working men refuse to do this.[7]

Wallace enlarged this labor view in public answer to a letter from Benjamin C. Marsh, who was secretary of the People's Lobby of Washington, which, according to *Wallaces' Farmer*, worked with labor and several "more radical farm organizations."

We agree absolutely with Mr. Marsh that city labor furnishes the best market for farm products. But we would make this important addition, and that is that the labor must be fully employed. If labor asks, as it is doing now, twice as much for its services as it did before the war, labor will not be fully employed and there will inevitably be 3,000,000 to 5,000,000 men idle as is the case at the present time.[8]

Wallace said that the farmers were caught between the Scylla and Charybdis of capital and labor. He feared that the American farmer only recently freed from the grasp of capital, was drifting toward the whirlpool of labor domination. Wallace claimed that capital, as in the case of the miners and railroad workers who were still getting twice their prewar income, was afraid to break wages to the farm level. The United States Steel Corporation had "faced the matter more courageously" Wallace felt, by "reducing wages to only 50 percent above prewar."[9] In October of 1921, he was encouraged by the fact that the railway wage cuts were being put into effect. The direct result of this policy would eventually mean lower freight rates even though the farmers would have to wait out a strike. Wallace asked the farmers to help by showing the railway unions that "public sentiment will not tolerate railway wages of more than 60 percent above the prewar level."[10] Henry Wallace repeated in almost every issue of the paper in the earlier years the demand for a labor wage policy of not more than 70 percent above prewar.

The editorials on the railroad strike give additional insight into Wallace's labor position in the early twenties. He felt that the Labor Board's decision to reduce railroad wages was the proper thing to do. When in September 1922, Attorney General Daugherty placed an injunction on the strike, he spoke out in favor of the government's stand. Wallace disapproved of the use of the injunction but felt that a strike against the findings of the United States Labor Board was an infringement on the rights of the American people.[11]

By 1924, Wallace softened his attitude to show some sympathy for the position of labor. He still objected to the laboring man's position inasmuch as it hurt the farmer. In May of 1924, he presented his revised position.

It is easy to agree that labor really should have had more. When labor takes twice as much as before the war, however, and doesn't work as hard, at a time when farmers are getting only slightly more than before the

[6] *Ibid.*, 48(3):1030 (July 27, 1923).
[7] *Ibid.*, 46(25):904 (June 24, 1921).
[8] *Ibid.*, 46(33):1065 (Aug. 19, 1921).
[9] *Ibid.*, 46(40):1233 (Oct. 7, 1921).
[10] *Ibid.*, 46(42):1297 (Oct. 21, 1921).
[11] *Ibid.*, 47(36):1041 (Sep. 8, 1922).

war, a disastrous situation is created. We don't claim that labor is altogether responsible for it, but do say that if the present situation continues for any great length of time, there will sooner or later develop a disaster in the business world of such magnitude that even the most powerful of the labor unions will be shaken from stem to stern.[12]

Moreover, there are some indications that Wallace did not object to the use of the strike by labor. He did not object either, as can be seen by some of the earlier evidences cited, to government regulation in the field of labor relations.

The editorials on foreign affairs in this period reflected the concern which *Wallaces' Farmer* and Henry Wallace felt for the economic problems of the time. One of the early questions he discussed was the indemnities which had been charged to Germany after the first World War. In April of 1921, he pointed out that Germany's ability to pay the twenty-three million owed the United States was the basis of our prosperity and as such, the return of Silesia to the Germans would help the American economy by increasing the German ability to pay.[13] Wallace accused the German industrial interests of trying to fool the workers by the devaluation of the mark. Said Henry Wallace, Germany will eventually pay for the war by "the self-denial of her laboring people, a self-denial enforced by a manipulated currency."[14]

In October of 1921, he supported Hughes and Root in their attempts to work out a disarmament program. Wallace felt that some form of disarmament would be worked out since the taxpayers were on the government's neck.[15] He pointed out that Harding's policy of setting up specific ideas rather than general principles, as did Wilson, would probably cause the Naval disarmament plan to pass.[16] Throughout the period covered by this paper, Wallace's editorials opposed armament for any more than defense. Henry Wallace summed up his views on foreign policy in an editorial on "The Causes of War" on February 22, 1924. He maintained that only a sentimentalist believes that leagues and conferences can prevent war, for wars are made by highly industrialized nations looking for undeveloped nations to exploit.

It is well to keep in mind these two things: what war is, and what makes war. If we hate this thing war badly enough, we may be willing to take a strong stand against the factors that make for war. We may be willing to insist that investors and traders abroad carry their own risks, and that the men and the treasury of the nation be saved for a more worthy cause than securing profits for economic adventures.[17]

In October 1922, Wallace's editorial "Most Hated Nation" objected to American control of foreign corporations which he felt would lead to small conflicts where force would have to be used.[18] On November 10, 1922, Wallace also discussed this problem of foreign investment.[19] He contended that America was allowing investors to make American foreign policy. This, argued Henry Wallace, would mean a larger Army and Navy. He criticized a specific group of eastern industrialists including, interestingly enough, the former assistant secretary of the Navy, Franklin Delano Roosevelt.[20] Wallace feared that since many of these investments went to South America they would have to be repaid in agricultural surplus with a bad effect on agriculture.[21]

The economic policies of eastern manufacturers caused Wallace concern. In March 1921, he wrote a long editorial, "The England of the United States" which was enlarged upon on several later occasions. The England of the United States to Henry Wallace was the region around Boston, New York, Philadelphia and Baltimore. One day he predicted, this area will have a population of 50 million and like England will seek the cheapest food. British policy, which might become the policy of this highly populated area, said Wallace, had forced England to spend hundreds of millions of dollars for a navy while making the British Isles dependent on foreign sources for food stuffs. Wallace argued that it would be ruinous for midwestern agriculture if this industrial area gained control. The only solution, therefore, was a substantial tariff on food products in order to prevent the industrial east from committing the British error in the United States.[22]

All through the early period of this paper the editorials supported different types of agricultural tariff. Wallace's most insistent demand was to raise protective tariff on agriculture to the level of that protecting industry. He believed in a

[12] *Ibid.*, 49(22):819 (May 30, 1924).
[13] *Ibid.*, 46(13):576 (Apr. 1, 1921).
[14] *Ibid.*, 46(14):608 (Apr. 8, 1921).
[15] *Ibid.*, 46(41):1265 (Oct. 14, 1921).
[16] *Ibid.*, 46(46):1421 (Nov. 25, 1921).
[17] *Ibid.*, 49(9):293 (Feb. 22, 1924).
[18] *Ibid.*, 47(40):1157 (Oct. 6, 1922).
[19] *Ibid.*, 47(45):1325 (Nov. 10, 1922).
[20] *Ibid.*, 47(41):1189 (Oct. 13, 1922).
[21] *Ibid.*, 47(37):1073 (Sep. 15, 1922).
[22] *Ibid.*, 46(12):545 (Mar. 25, 1921).

fluctuating tariff policy which would bring the price up to the cost but which would be removed when prices became high, because, it was pointed out, there was nothing to gain from holding prices above the cost of production.[23]

Strictly speaking, however, Wallace did not represent the high tariff point of view. In September of 1922, during a conference committee on a tariff bill, which proposed a duty on agricultural items, he objected to the idea of a reduction of the tariff on wool, pointing out that this would be all right if there were a reduction of tariff on the finished products also. Wallace said, "farmers are willing to take lower rates on their products if manufacturers submit to a lowering of rates on their goods also."[24] Wallace did not urge the tariff, *per se*, as a solution.

Harding's speech in June 1921 demanding "less government in business and more business in government" brought an immediate response from Wallace. The principle was supported but Wallace pointed out that this was not an argument against the supervision of packing houses and grain exchanges. To prevent bad business practices, he considered government supervision essential. Banks and insurance companies fought government regulation earlier but now they wouldn't be without it. Wallace's article concluded, "Honest packers and honest grain dealers will find that government supervision will help rather than hurt them."[25]

All through the early period, Wallace campaigned for an increase in farm cooperatives, pointing out that cooperatives were needed so that local groups could have their own business organization without being subject to eastern interests.[26] A great deal of space was given to this issue because it was a good example of how the farmer could get his share of the national income and still maintain his independence.

In the early twenties, *Wallaces' Farmer* encouraged midwestern farmers in attempts to reduce the freight rates. The editorials linked the farmers' fear of foreign competition to the freight rate issue. The major markets for all American surpluses were in Europe. The problem of the American farmer was to get his produce on the European market economically enough so that it could compete with the produce of other nations. In August 1921, Wallace pointed out that it cost the midwestern farmer 7 cents more per bushel to put his wheat on the Liverpool market than it cost the Argentine farmer. The charge to the United States farmer was about 42 cents per bushel, of which two-thirds was land freight and one-third ocean freight.[27]

The St. Lawrence Waterway was one of the solutions to the problem of freight rates backed by Henry Wallace. To Wallace, the eastern influences of Canada and the United States were the main cause for the defeat of the plan. He called attention to the possibility of a union between the farmers of Canada and the United States.[28]

In 1921, Wallace asked for a reduction of the rate of interest on loans. At a time when the farmer was experiencing difficulty in meeting his commitments, rates of interest set by the Federal Reserve System seemed extremely high. Wallace defended the farmers' position on mild inflation. He pointed out that 40 percent cash reserves were required against the federal reserve notes and 3.5 percent against deposits in the Federal Reserve System. He felt that the former should be reduced to 30 percent.[29] He supported a policy of lowering interest rates to 5 percent. In July of 1921, when he made this proposal, he pointed out that this would be skating on thin ice, but that it was justified since the thin ice was passing.[30] He called attention to the 400 million dollars in reserves, although he felt that the reserves in themselves were not enough to insure prosperity.[31]

Wallace supported the Bonus Bill since this would enable more men to pay off their debts. As with the interest rates on loans, he was not concerned with the inflation that this might cause, but rather wanted to encourage mild inflation.[32]

Wallace gave strong support to the Fisher stabilized dollar. He contended that 90 percent of the class warfare was caused by alternating periods of inflation and deflation.[33] In August of 1926, he acted upon his conviction with support for the Strong Plan for the stabilized dollar. He did this even though he felt that there were some factors which made it weaker than the plan of Professor Fisher.[34]

[23] *Ibid.*, 46(11):505 (Mar. 18, 1921).
[24] *Ibid.*, 47(37): (Sep. 15, 1922).
[25] *Ibid.*, 46(24):881 (June 17, 1921).
[26] For example, *ibid.*, 47(1):5 (Jan. 6, 1922).
[27] *Ibid.*, 46(31):1021 (Aug. 5, 1921).
[28] *Ibid.*, 47(23):712 (June 9, 1922).
[29] *Ibid.*, 46(27):944 (July 8, 1921).
[30] *Ibid.*, 46(28):964 (July 15, 1921).
[31] *Ibid.*, 47(3):69 (Jan. 20, 1922).
[32] *Ibid.*, 47(11):356 (Mar. 17, 1922).
[33] *Ibid.*, 47(34):895 (Aug. 25, 1922).
[34] *Ibid.*, 51(33):1055 (Aug. 13, 1926).

The Period of Change. During the middle twenties most of the views expressed in the previous section were altered. The farm depression of that time caused the farmers and Henry Wallace to look for new and more rapid methods of establishing stability.

On the issue of foreign entanglements, Wallace's editorial views did not change. In October of 1925, the Navy League of the United States felt the full wrath of his objection to large scale rearmament. A letter sent him by the Navy League pointed out the benefits which would come to the farmer from a larger and stronger navy. This touched off an editorial explosion in return.

> The farmer need not worry about the problem of getting his surplus across the water. Folks who want food are willing to come after it. The warship is needed only to back up the sort of foreign trade that is interested in collecting exorbitant interest rates and in exchanging manufactured goods for twice their value in raw materials.
>
> The farmers of the country want a navy strong enough to make sure of adequate national defense on the sea. They are, however, not at all interested in the creation of a navy which can be used for expeditions to different parts of the world to carry out the dictates of "dollar diplomacy."[35]

In July 1926, commenting on a speech by Secretary Mellon, Henry Wallace criticized the foreign debt payments. He contended that the policy of the "Eastern Administration" toward the foreign debt situation had failed to take the midwestern farmer into consideration and demanded that these debts be cancelled. Wallace felt that the country was placing itself at a disadvantage by taking away foreign nations' ability to buy American farm surpluses.[36]

The international situation of that time, to Wallace, was the basis for a depression which he felt could not be avoided under the then current policy. France was living in pseudo-prosperity caused by inflation and the franc, he warned, would go the way of the German mark if the French policy of inflation continued for any length of time. This, he felt, was the watchword for America as a collapse in France would lead to our depression because of its effect on America's main markets of England and Germany.[37]

Wallace feared that people misunderstood the position of the farmer in times of depression. Many serious minded people, according to Wallace, could not understand how the farmer could be led to price fixing in farm products. In order to understand this, one had to realize the relationships which existed between the supply and price interactions in farm and city products.

> This study brings out in concrete quantitative fashion what farmers have been instinctively feeling for the past 60 years: *that there is one law of supply and demand for city products and another for farm products.* . . .
>
> . . . Of course the truth of the situation is that with most mined or manufactured commodities prices come first and supply comes second. In agriculture, supply sets the price. In industry, price sets the supply.

Significant to the future was Wallace's confession that it was conceivable that in order to solve this problem the program would have to be handed over to the government.[38]

In this middle period, Wallace placed the tariff, as a major solution to American agricultural problems, on the shelf for keeps. With other farm leaders he took the position that a tariff on a surplus item had little or no effect. It was no longer a question of what price could be secured for agricultural products, but could *any* price be secured. The shoe was then on the other foot. As far as Henry Wallace was concerned, the farmer did not need protection. As a matter of fact, the eastern industrial interests, who had now become the major antagonists of midwestern farm policy, were far more in need of the tariff than was agriculture.

Editorials from 1924 through 1927 seemed designed to frighten industry into a farm price program with the threat of free trade. Wallace, on several occasions, stated that free trade would allow foreign countries to make a profit on the sale of manufactured goods in the United States with which they could buy farm products.[39]

In October 1926, Henry Wallace spoke of the possibility of an "Ever Normal Granary." He admitted that there might not be any need for it during this time of surpluses, but the nation should think in terms of a permanent policy.[40] In the light of future actions, it is easy to say that

[35] *Ibid.*, 50(44):1420 (Oct. 20, 1925).
[36] *Ibid.*, 50(28):943 (July 9, 1925).
[37] *Ibid.*, 49(3):129 (Jan. 25, 1924).
[38] Henry A. Wallace, "Supply and Price Interactions in Farm and City Products," American Academy of Political and Social Science, *Annals*, 117:243–244 (January 1925). (Italics added).
[39] For example, *Wallaces' Farmer*, 50(37):1157 (Sep. 11, 1925).
[40] *Ibid.*, 51(41):1315 (Oct. 8, 1926).

Henry Wallace placed great faith in this idea but he gave little editorial space to the plan in this period.[41] In this October editorial, Wallace blamed the government, through its extension service, for the situation which existed. Therefore, he contended, the question of "government meddling" was academic and "the government should either stop boosting agricultural production or should go ahead and work out an agricultural program designed to safeguard the future welfare of the nation."[42]

By January 1924, Henry Wallace had been won to the cause of the export corporation plan later to become the McNary-Haugen Bill. Carefully he explained the main principles and benefits of the plan to his farm readers. It was not, he maintained, a price fixing scheme or a raid on the treasury. It was simply a tax on crops which would be used to pay the difference between the price which the government could get for the surplus and what the government had to pay the farmer. These crops would be dumped by the government on foreign markets at a loss. The tax, Wallace reasoned, coming from the farmer originally would pay the government its loss without hurting the economy.[43]

The objection to the McNary-Haugen plan was immediate and strong. The *Chicago Daily Tribune* contended that the farmer must be helped by natural means. Farmers, according to the *Tribune* must shift production from one commodity to another. Wallace was stung immediately to reply that the *Tribune* really was encouraging enough farmers to go bankrupt to eliminate the surplus.[44]

Wallace brushed aside the *Wall Street Journals'* objection to the McNary-Haugen Bill as a plan to raise the cost of living. The farmer was not responsible for the high cost of living, he was being underpaid and Wallace's statistics proved this contention. Price increases figured on the basis of 1913 levels, showed that clothing was 176 percent higher, fuel and light 181.3 percent higher, and furniture and household furnishings 222.4 percent higher, while the major food products lagged far behind with corn 4 percent higher, wheat 3 percent lower, and hogs 3 percent lower.[45]

By April 1924, the battle was in full swing. Wallace listed the main objectors to the bill. They were the grain exchanges, the packers, the livestock exchanges, the National City Bank of New York, and the Chase National Bank.[46] Significant by its absence was labor. The American Federation of Labor, along with the American Farm Bureau Federation and the National Grange, had placed its support behind the McNary-Haugen Bill. Here, around the nucleus of the McNary-Haugen Bill was evolving a new political feeling. Because of the bill, lines were clearly drawn. The small farmer, aided by organized labor, was battling it out with the large eastern banking interests. The laboring man was no longer an enemy because of demands for higher wages when the farmer was getting less, but was now aiding the farmer in his real demands for equality. In December 1926, Wallace pointed out that the real friends of labor favor the export plan and that "most of the folks who talk about the need for consideration of the working man are mainly interested in cheaper food, so it will give them a chance to force wages *down*."[47]

In January 1924, Wallace obliquely commended Samuel Gompers when he pointed out that agriculture needed a Gompers: "A fighting man of conservative single-track mind who is instinctively selfish for the cause of agriculture without realizing the narrowness of his viewpoint." This "Gompers type of leadership" was essential at the start although eventually leaders of all phases of the American economy must have a better understanding of the fundamentals of economics.[48] The significant factor here is that Henry Wallace was now prepared to admit that agriculture had

[41] Russell Lord, *The Wallaces of Iowa* (Boston, 1947), 233–234. "Steadily, over a decade, Wallace's editorials argued for withholding, for farm storage and state storage, producing figures to show that it generally paid. Then in 1920, while browsing through the Des Moines Public Library, Henry A. came upon a book, *Economic Principles of Confucius*, written as a thesis by a Chinese graduate student at Columbia University, Chen Huan-Chang. Chapter 30 describes the workings of a 'constantly normal granary' which had operated with general success to moderate the alternations between glut and famine in China two thousand years ago. Wallace changed the term to 'Ever Normal Granary' and started plugging editorially for an American adaptation of the idea."

This is cited to show a different view of the Ever Normal Granary.

[42] *Wallaces' Farmer*, 51(41):1315 (Oct. 8, 1926).

[43] *Ibid.*, 49(2):44 (Jan. 11, 1924).

[44] *Ibid.*, 49(20):761 (May 16, 1924).

[45] *Ibid.*, 49(6):208 (Feb. 8, 1924).

[46] *Ibid.*, 49(15):587 (Apr. 11, 1924).

[47] *Ibid.*, 51(51):1660 (Dec. 17, 1926). (Italics added).

[48] *Ibid.*, 49(2):43 (Jan. 11, 1924).

lost the battle to reduce the other elements of the economy to its level and now must embark on a strong campaign of its own.

President Coolidge, in his message to Congress late in 1926, set the stage for the final break in Wallace's support of the Republican administration. On December 17, 1926, Wallace tried to evaluate the President's message.

> President Coolidge's message to congress has, in the passages dealing with agriculture, a more amiable tone than his remarks on the same subject last year. The existence of a surplus problem is recognized and approval of a possible remedy is given in general terms that might apply to the McNary-Haugen bill, the export debenture plan or almost anything else.

Farmers realize, said Wallace, that a bill could be fought either in the open or undercover, but that "we prefer, for the moment, to take the president's statements at their face value."[49]

Wallace charged directly in August 1925, that the Department of Agriculture, with Henry C. Wallace now dead, was going through a Hooverization process. He criticized Secretary Jardine for a speech at Ames, Iowa which followed the Hoover line and supported big business. Now with the firing of Henry C. Taylor, who with H. C. Wallace was a leader in the introduction of marketing studies in the department, Wallace grieved that the Department of Agirculture was being turned over to Hooverites who wanted farmers to produce more without consideration of the result.[50]

The Election of 1928. As has been mentioned in the previous sections of this paper, Wallace's main interest was to establish agricultural equality with the other segments of the economy. In the latter part of the twenties he associated this desire with McNary-Haugenism. When the McNary-Haugen Bill passed in committee in January 1927, he wrote;

> This action puts the decision on farm legislation squarely up to the main bodies of congress, and, in fact, up to the administration. If the administration forces want to prevent action by refusing to give an opportunity for a veto, they have the power. Will they dare to use it?[51]

President Coolidge's veto of the bill brought an immediate reaction from Wallace. He bitterly lashed back at the veto message.

> In the veto message characterized by intemperance of language, ignorance of the situation of agriculture and the provisions of the bill, the president impeached every supporter of equality for agriculture as a backer of vicious and corrupt legislation. In the name of beneficiaries of special legislation ranging from the tariff to the banking bill, he accused the agriculture of America of the crime of desiring a fair share of the national income and of devising a plan to secure it.[52]

There can be no doubt from the tenor of the words, if not from the actual statements, that Wallace had decided that the only way to save the McNary-Haugen Bill was to bring into Washington a new administration. The defeat of the McNary-Haugen Bill was now clearly an issue involving the President.

From his summer White House in the Black Hills, Coolidge announced in July that the administration was working on a farm bill to meet its promises for relief of the farmer. Wallace's editorials revealed another idea about the conference in the Black Hills.

> The background for the new farm bill is being carefully built up at the summer White House in the Black Hills. Editors, politicians, businessmen and a few tame farmers call to discuss the state of agriculture. After each conference, the press is informed that progress is being made on the farm bill that the administration is preparing.
>
> Meanwhile Secretary Jardine has the complete bill in his pocket. It was drawn up long before the presidential vacation was started. Its provisions have been explained to at least one farm group. The conferences in the Black Hills are apparently just stage setting to make the announcement of the measure more impressive when the time comes.
>
> What is the new bill? One provision ought to horrify the folks who worried about the "economic unsoundness" of the McNary-Haugen measure. It appropriates $300,000,000, just as the farm bill did but provides that losses of the marketing corporation set up under the act may be paid out of the appropriation.

Wallace complained that this plan without a farm control board or equalization fee would merely be a drain on the treasury. He said that when the appropriation had been spent, no more money would be appropriated with the charge that the farmer was trying to strip the treasury. Wallace accused the administration of ignoring economic soundness and merely looking for a stopgap measure to quiet the farmers.[53]

[49] *Ibid.*, 51(51):1660 (Dec. 17, 1926).
[50] *Ibid.*, 50(35):1090 (Aug. 28, 1925).
[51] *Ibid.*, 52(4):128 (Jan. 28, 1927).
[52] *Ibid.*, 52(9):344 (Mar. 4, 1927).
[53] *Ibid.*, 52(27):934 (July 8, 1927).

There can be no doubt that Wallace and the farmers that he represented were determined to get results or a President's scalp. Coolidge's decision not to run was encouraging to Henry Wallace. He felt that this would give the McNary-Haugen Bill a better chance to pass since the President would not be so interested in controlling the government. At this same time, *Wallaces' Farmer* backed Frank O. Lowden as the Republican Presidential candidate. Lowden, Wallace said, was the best qualified to understand the agricultural problem.[54]

In June 1928, the final blow fell. For the second time, Coolidge vetoed the McNary-Haugen Bill in unrestrained language. Wallace returned to the technique of Uncle Henry to use the Bible in expressing the farmer's answer to Coolidge.

> So Jeroboam and all the people came to Rehoboam the third day, as the king had appointed, saying, Come to me again the third day.
>
> And the king answered the people roughly, and forsook the old men's counsel that they gave him;
>
> And spake to them after the counsel of the young men, saying, my father made your yoke heavy; and I will add to your yoke: my father also chastised you with whips, but I will chastise you with scorpions. . . .
>
> So when all Israel saw that the king harkened not unto them, the people answered the king, saying,
>
> What portion have we in David? Neither have we inheritance in the son of Jesse: to your tents, O Israel: now see to thine own house, David (I Kings 12:12–16).[55]

In May of 1928 Wallace pointed out his objections to Hoover or Coolidge and continued the fight to make Lowden the Republican candidate for President. He was afraid that some Republicans would try to deadlock the convention between Hoover and Lowden and therefore be able to draft Coolidge. He complained that Iowa was considered so solid a Republican state that it would not be given due consideration by the Republican leaders.[56]

After Coolidge's second veto message, Wallace made himself as clear as could be expected. "The veto message has made it impossible for any farmer with self respect to vote for Coolidge or for any candidate who, like Hoover, supports the Coolidge policy toward agriculture."[57]

With the nomination of Herbert Hoover by the Republicans for President of the United States, the editorials in *Wallaces' Farmer*, whose readers came, as Wallace had complained earlier, from solidly Republican Iowa, became masterpieces of tact and careful wording. On July 13, 1928, Wallace discussed the Republican farm plan. As in the case of the second veto message, he reached for the Bible: "They have healed also the hurt of my people slightly, saying, Peace, peace; when there is no peace." Jeremiah 6:14.

However, Wallace made it clear immediately that he favored neither Hoover nor Smith. He claimed that the main aim of the farmers should be to hold a middle position and draw concessions from both parties in return for their votes. The editorials pointed out that Smith, the Democratic candidate, was giving the farmer what he wanted. Hoover had spoken idealistically in terms of farm relief but had said nothing concrete whereas Smith had made definite proposals. But, it was emphasized, *Wallaces' Farmer* was still nonpartisan.[58]

Even before the two Presidential candidates were nominated, Wallace, in a signed editorial, had made favorable comments about Alfred E. Smith. "It is quite commonly believed by well posted farm-minded people, that Smith would handle the farm problem in a fairer way than either Coolidge or Hoover. However, he is so completely ignorant of everything connected with agriculture that much would depend on whom he selected for advice along this line."[59] On June 8, 1928, he commended Smith for the agricultural committee he had appointed to make a rough land survey in New York State.[60] Russell Lord points out that despite the fact that Wallace did not go to Houston to the Democratic convention, he threw his support to Smith after hearing Smith's speech in Omaha later in the summer. Lord claims that Wallace later said:

> I was especially intrigued by his support of McNary-Haugenism, and I really thought Al meant what he said at the time. Later I was informed that he had been posted quite substantially by certain folks who knew more about the farm problem than he did, and while he had a grasp of the words he wasn't quite up to grasping the content of the bill. It does make a difference whether you are only repeating words or whether you understand what you are saying. However, he had it all down on the backs of envelopes, and sounded as if

[54] *Ibid.*, 52(32):1045 (Aug. 12, 1927).
[55] *Ibid.*, 53(22):844 (June 1, 1928).
[56] *Ibid.*, 53(19):745 (May 11, 1928).
[57] *Ibid.*, 53(22):844 (June 1, 1928).
[58] *Ibid.*, 53(28):1009 (July 13, 1928).
[59] *Ibid.*, 53(19):745 (May 11, 1928).
[60] *Ibid.*, 53(22):869 (June 8, 1928).

he meant it. The following day I defended him before the Farmers' Union and the next day I went up to the Methodist Conference and defended him to the Methodists.[61]

Lord also writes:

> But the word had gone out under headlines that a Wallace of Iowa had turned from Republicanism; and in each speech thereafter he did turn further. He did not like the way in which Smith's religion, Catholicism, was used to smear him as the campaign grew hotter. He did not like the carefully documented record Hoover uncovered to claim that in clearing the post armistice surpluses of 1919 he saved farmers from catastrophe. And he rather enjoyed riding around in the same automobile with Milo Reno and other agrarian wild men, raising his voice against tariff-fed industrialists who were out to skin farmers further and increase their own unseemly corpulence by hoisting tariffs some more. That, far more than McNary-Haugenism, *per se*, was the line Wallace took in this 1928 campaign; and he was in some part non-partisan, for, in his quiet way, he tore into high tariff Democrats and Republicans alike.[62]

In his editorials Wallace never mentioned the question of Catholicism or the smear campaign surrounding it. He attacked the Hoover claims on the post-armistice surpluses of 1919, but never made a major issue of this. There is no mention of Milo Reno (perhaps because of the reading public of *Wallaces' Farmer*), but one thing which dominated the Wallace editorials during the 1928 campaign was NcNary-Haugenism. Wallace never officially committed himself editorially as a Republican or as a Democrat, but from the standpoint of what he wrote in *Wallaces' Farmer*, there can be no doubt that Wallace was impressed by the fact that a Republican Congress had defeated the McNary-Haugen Bill and that a Republican president had twice, with the full support and possible guidance of Herbert Hoover, vetoed the bill in no uncertain terms. Alfred E. Smith, on the other hand, ignorant of agriculture or well-coached or both, had supported the McNary-Haugen Bill to the hilt.

Certainly other factors contributed to Wallace's views. His dislike for Hoover, his realization that Smith would lose considerable rural support because of his stand on the prohibition question were but fringe issues as compared with McNary-Haugenism in Henry Agard Wallace's political position in the Presidential campaign of 1928.

Summary. The search for stability in agriculture dominated the editorially expressed politico-economic philosophy of Henry Agard Wallace during the twenties. In his view, the farmer was not getting a fair deal. This was exemplified in his attitude toward the laboring man and the larger eastern banking interests. He objected to American intervention in foreign markets and wanted available capital used within the United States. At first he objected to a farm policy which would restrict the farmers and called upon them to restrict their own production.

During the twenties, however, the editorials shifted their emphasis. Though still opposed to foreign entanglements, Wallace adapted his whole policy to conditions in agriculture which he felt could only be solved by a long range permanent program. He found this in McNary-Haugenism. His acceptance of this export plan forced him to re-evaluate his attitude toward labor and become less conciliatory toward capital. This also led inevitably to a growing impatience with the Republican administrations.

To Wallace, the McNary-Haugen Bills and the equality of agriculture became synonymous. Hoover's failure to go beyond his predecessor in the support of McNary-Haugenism drove Henry Wallace from the shelter of traditional Republicanism to support for Democratic Al Smith.

[61] Lord, *The Wallaces of Iowa*, 275–276 (not documented). See also *Des Moines Register*, September 20, 1928, p. 1: "The farmer of the United States can best serve his own ends by throwing his influence to Governor Alfred E. Smith for President, Henry A. Wallace, editor of *Wallaces' Farmer*, told the convention of the Iowa Farmers Union yesterday afternoon." Also, *Des Moines Register*, Sept. 21, 1928, p. 2: "'I am not a champion of Mr. Hoover in any sense. I want that clear,' he (Henry Wallace speaking to the Methodist Convention at Vinton) said, 'Neither am I champion of Mr. Smith, but I feel that the election of Smith will bring us agricultural aid much sooner than the election of Mr. Hoover.'"

[62] Lord, *The Wallaces of Iowa* p. 277 (not documented).

ANTECEDENTS OF TVA: THE LEGISLATIVE HISTORY OF MUSCLE SHOALS

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The Tennessee Valley Authority has come to symbolize regional resource development and multipurpose river control to such an extent that its somewhat fortuitous legislative origins are often forgotten.[1] Yet the legislative history of the TVA Act is of considerable significance to a fundamental understanding and appraisal of TVA, its programs, and accomplishments.

Such history is particularly important with regard to the agricultural provisions of the TVA statute because they are in many respects of a different character from the other parts of the Act, and they continue to pose major problems of policy and interpretation. Regional authorities have been proposed for the Missouri, the Columbia, and other basins, but no one has seriously suggested that these extensions of the "TVA Idea" should include authorizations with respect to fertilizer and munitions research and production like those in the TVA Act. Yet the fertilizer parts of the TVA charter are almost the sole provisions with respect to agriculture and form the heart of its agricultural program. Moreover, it is probable that TVA might never have been created in the absence of the Muscle Shoals fertilizer-munitions problem with the attendant debate over the disposition of the industrial properties built by the government as a part of the World War I armament effort.

The enactment of the TVA statute was made possible by a convergence of three fundamental and distinct interests: (1) interest in the development of the Tennessee River for navigation, flood control, and especially power; (2) interest in the use of the government-owned nitrate plants at Muscle Shoals, Alabama, for the production of fertilizers and munitions; and (3) interest in regional planning and resource development. This paper is primarily concerned with that history which centered around the Muscle Shoals plants and the fertilizer-munitions provisions of the TVA Act. No attempt is made to treat the complex development of the public power movement in detail, nor to appraise the impact of regionalism and regional thought on the TVA statute. These are properly subjects for separate studies. They are referred to in this paper only to the extent that they have a bearing upon the fertilizer-munitions or Muscle Shoals phases of the TVA legislative history.

National interest in Muscle Shoals dates back to the early settlement of Tennessee and Alabama, for the obstruction to navigation at Muscle Shoals proved a major obstacle to the pioneers who sought to conquer the wilderness traveling by flatboat and barge.[2] Government aid in canalizing the Tennessee River around the treacherous shoals was sought as a part of the internal improvements boom of the 1820s. Numerous attempts and proposals were made during the ensuing 75 years to eliminate this hazard to navigation. But the canals which were built provided only a partial solution to the problem.

With the development of the technology of electric power generation at the end of the nineteenth century, Muscle Shoals attracted the interest of a number of promoters as a potential water power site. From the time of the first bill[3] in 1898 which sought to grant authority for private development of the Shoals until 1916, expression of interest in the development of Muscle Shoals generally reflected a combined interest in navigation and power generation. In the proposals of this period, moreover, it was quite generally accepted

[1] This article is based upon part of an unpublished doctoral dissertation by the author submitted to the University of Wisconsin (1947). An unpublished TVA file on the legislative history of the TVA Act has been of considerable value in the preparation of this article. For an analysis of the symbolic significance of TVA see Norman Wengert, "TVA—Symbol and Reality," *Journal of Politics*, 13:369–392 (August 1951). For a full study of the TVA agricultural program see Norman Wengert, *Valley of Tomorrow* (University of Tennessee Record, Extension Series, v. 28, no. 1, Knoxville, 1952).

[2] On the navigation aspects of the Tennessee River see Tennessee Valley Authority, "A History of Navigation on the Tennessee River System," 75 Congress, 1 session, *House Documents* (1937), no. 254, serial 10119.

[3] *Congressional Record*, 31:3068 (1898).

that the power would be developed by private capital, while the government's participation would be limited to the navigation aspects of the project.

All of the proposals that were made during this period—and there were many, because Muscle Shoals was such a fine hydro power site—failed primarily for two reasons: First, it was during this period that the conservation movement was born, and outspoken leaders were deploring the prodigal exploitation of natural resources to the sole benefit of a few individuals and corporations. They urged at the same time that the government should stop giving away tremendous public assets which were to be found in the navigable streams of the nation.[4] Specifically with respect to Muscle Shoals it was pointed out that proposals for private power development generally sought what amounted to subsidies disguised as navigation costs, which were traditionally borne by the Federal government. Congress was at this time not interested in adopting a policy of direct participation in power development, and no scheme to subsidize power through navigation expenditures was sufficiently palatable to gain the necessary support, especially in face of possible presidential veto. As a result, none of the proposals for private development with government participation in the navigation phases of the project received authorization. The second factor which during this period saved Muscle Shoals for later public development was the tremendous cost of the project and the typical inability of the private power promoters to anticipate the growth of their industry. Electric power production and distribution was a new industry at this time, and prospects in Northern Alabama seemed particularly dubious in view of its rural character, and no one foresaw long distance power transmission, nor the development of the electrochemical industry.

The delays which resulted from these influences were only temporary, for as the technology of electricity progressed, the water power aspects of the Shoals drew increasing attention. Consequently greater pressure was exerted on Congress to gain concessions at this site. It is worth emphasizing that during this period little thought was given to public development of the power facilities. "Monopolistic" exploitation was opposed, but direct public development was still in the future.

The outbreak of war in Europe in the summer of 1914 increased interest in Muscle Shoals from the point of view of electro-chemical nitrate synthesis, and later, with American entry into the conflict imminent, the problem of nitrate supply became of primary significance. Even before our actual involvement, private utility promoters tried to use the nitrate situation as a lever to obtain the concessions that Congress had not been willing to grant in peace.[5]

It was in these circumstances that Senator Ellison ("Cotton Ed") D. Smith of South Carolina introduced a nitrate bill which started a line of thought that became a major factor in the legislative history of the TVA Act.[6] The most startling feature of the Smith Bill was that it provided for public ownership and operation of the nitrate facilities it authorized. Smith's measure stated that the President should designate the necessary water power sites at which the Secretary of Agriculture was authorized "to construct, maintain, and operate . . . plants and equipment necessary or convenient for the generation of electrical or other power for the production of nitrates or other products useful in the manufacture of fertilizers and munitions of war." The Secretary of Agriculture was also authorized to dispose of the products under such regulations as he prescribed, munitions being subject to Army or Navy requisition.

So far as the record indicates, Smith had no interest in sponsoring this bill except his interest in Southern agriculture. He was a cotton planter and had at that time established his reputation in the interest of "King Cotton." Cheap and abundant nitrate fertilizer was one of those interests, and it was to become an increasingly important factor in the agriculture of the Cotton South. In the hearings held on his bill by the

[4] In this connection, the message of President Theodore Roosevelt vetoing a bill granting consent to "N. F. Thompson and associates to erect a dam and construct a power station at Muscle Shoals, Alabama" is of interest. See *Congressional Record*, 36:3071–3073 (1903). See also "Report of the War Department, 1908," 60 Congress, 2 session, *House Documents* (1909), no. 1042, 5:20, 26, serial 5424; and "Survey of the Tennessee River," 62 Congress, 2 session, *House Documents* (1912), no. 360, serial 6206.

[5] An example of this type of legislation was a bill introduced by Senator Shields, 64 Congress, 1 session (1916), S. 3331.

[6] 64 Congress, 1 session (1916), S. 4971.

Senate Committee on Agriculture and Forestry, Smith declared:

> I want to say that in introducing this bill my attention had never been specifically called to the Muscle Shoals or any other water power in the country. . . . I want to make this further statement, that I have introduced this bill for bringing out and determining whether or not it is feasible for the Government to go into this business itself for the purpose of developing this ingredient without any regard to any private individual or any water power anywhere or any place. I have simply wanted to get the fact that this is feasible and can be enacted into law.[7]

The testimony before the Senate Committee on Agriculture and Forestry indicates a reasonable effort to get at the facts on the subject of nitrate technology. On the basis of these hearings the Committee recommended passage of the Smith Bill, but proposed a number of changes, the most important of which were the changes requiring public development and eliminating any provision for joint development by public and private capital.[8]

The parliamentary strategy which surrounded the progress of the Smith Bill from a separate bill supported by the Senate Agriculture Committee to a section of the National Defense Act was extremely complex. As was to be expected, various Senators were torn between conflicting interests regarding the Smith proposal. Few of them recognized clearly, if at all, its long-range implications. The Senators who spoke for the power interests which had been trying for over ten years to gain water power concessions at Muscle Shoals from the government found themselves agreeing to the need for nitrate development and to the need for government financial assistance. But they could not support public development which did not include their sponsors. Another group of whom Senator Sutherland (later justice of the Supreme Court) was chief spokesman, questioned the constitutionality of public industrial development of nitrates. Finally, there were those who suspected that any and all schemes were merely devious plots to defraud the people. This group ultimately joined with those who believed that public development was the most effective means for protecting the public interest, and together they formed the bloc which made possible the enactment of the Smith proposal by the Senate as a section of the National Defense Act.[9] These same general alignments characterized House consideration of the Smith proposal, which was finally adopted as Section 124 of the National Defense Act of 1916, and became law in June of that year.[10]

It was not until July 1917, however, that the Secretary of War established a Nitrate Division in the Ordnance Department to carry out the provisions of Section 124. Three months later, President Wilson selected Sheffield, Alabama (Muscle Shoals), as the site for Nitrate Plant Number 1, which was to be an experimental plant using the Haber process.[11] Increasing nitrate requirements, and the fear that the Haber process would not be successful, led President Wilson to order the construction of Nitrate Plant Number 2 a few miles from Plant Number 1. The second plant, however, was to use the established Cyanamid process. Contracts for plant construction and operation were accordingly let to the experienced Air Nitrate Corporation, a subsidiary of American Cyanamid. Work on this plant began in January 1918, and the first operation was completed on January 11, 1919. This plant cost $69,022,669. The Warrior River Steam Plant (built to supply power until Wilson Dam would

[7] U. S. Congress, Senate, Committee on Agriculture and Forestry, *Withdrawal of Water-Power Sites and Construction of Water-Power Plants for Manufacture of Nitrates. Hearings . . . on S. 4971 . . .*, 64 Congress, 1 session (1916), p. 31, 42–43. See also Senator Smith's statement on the floor of the Senate in *Congressional Record*, 53:5630 (1916).

[8] "Water Power Sites and the Manufacture of Nitrates," 64 Congress, 1 session, *Senate Reports* (1916), no. 325, serial 6898.

[9] For Senate discussion of this subject see *Congressional Record*, 53:5133, 5346, 5622, 5950, 6109 (1916).

[10] "Conference Report on bill to increase the efficiency of the Army," 64 Congress, 1 session, *House Reports* (1916), no. 644, serial 6904. This report reflects the attitude of the House. Floor debate in the House is recorded *Congressional Record*, 53:8398 (1916). *United States Statutes at Large*, 39:166.

[11] The following are particularly relevant to this phase of the Muscle Shoals problem: U. S. Congress, House of Representatives, Select Committee on Expenditures in the War Department, *Hearings, Subcommittee No. 5 . . .*, 66 Congress, 2 session (1920); "Report on Nitrates and Nitrate Plants," 66 Congress, 2 session, *House Reports* (1920), no. 998, serial 7654; U. S. War Department, Ordnance Department, *Report on Fixation and Utilization of Nitrogen* (Washington, 1922), hereafter cited as *Burns Report*.

be completed) cost an additional $4,979,782. The Waco Quarry, which was purchased to supply limestone for the Cyanamid process, cost $1,179,076.[12] As the chemical plant plans proceeded, President Wilson, on February 25, 1918, ordered the construction of Dam Number 2 (later to be named Wilson Dam) in accordance with the Army Engineers' plans which had been reported to Congress on June 16, 1916.[13] With the plans already completed, construction was begun in May 1918. But as had been predicted by the opponents of the Muscle Shoals Development, not any of the facilities contributed to the war.

In November 1918 the Republicans gained control of the House, and immediately sought to utilize the Muscle Shoals project to discredit the Democrats in anticipation of the next presidential election. Their efforts were embodied in an investigation chairmanned by Representative Graham, whose committee reported that the entire nitrate program was a failure, that it had cost a tremendous amount of money, that it had been grossly mismanaged, and that there had been collusion with private interests who had sought to have the government build Muscle Shoals Dam so that they could secure the power.[14]

Meanwhile, the Senate, which was still in Democratic control, considered the "Glasgow Report" on the disposition of the Muscle Shoals properties and its proposed draft bill providing for government operation of the facilities in accordance with Section 124 of the National Defense Act of 1916. The recommendations of this report took legislative form as the Wadsworth-Kahn Bill.[15] On June 1, 1920, the Senate Committee on Agriculture and Forestry reported this bill favorably, but no action was taken in that session, so that all hope for it died with the Republican election victory of 1920.

The first expression of hostility of the Republican Congress to the Muscle Shoals project developed in connection with the Army request for additional funds for completion of Wilson Dam. The Sundry Civil Appropriations Bill for the fiscal year ending June 30, 1922, was reported by Chairman James W. Good on December 29, 1920, without any mention of Wilson Dam, although existing appropriations were clearly insufficient to complete the structure.[16] The monies already appropriated lasted a few months beyond this date, but work was finally stopped on April 30, 1921. And therewith ended the war phase of the Muscle Shoals project.

During the next twelve years the problem of what to do with Muscle Shoals was to plague Congress almost constantly. It has been estimated that to 1933 no other single issue took so much Congressional time in committee and on the floor. Not less than 138 measures were introduced affecting the disposition of the Shoals. But it is not necessary to review these numerous proposals in detail. It is significant, however, to characterize the several interests that were striving during the period 1918 to 1933 to obtain control of this stepchild asset of the Federal government. Broadly speaking, it is possible to identify four separate groups interested in the disposition of the Shoals properties: (1) Those who conscientiously sought to protect the public interest in the power potential of the Tennessee River. In 1921 this group was small and drew much of its support from the conservationists who were strongly opposed to private exploitation, but who were not immediately convinced that public operation was the alternative. Ultimately when no adequate private offers were forthcoming, and in the face of the monopoly situation in the power field, they favored power production and distribution by the government itself. (2) Those who sought to get the advantages of the hydro facilities at the Shoals for the benefit of private power corporations. This group used various devices and subterfuges to seek the concessions they wanted, but their offers to manufacture fertilizer were as suspect as the offers at the turn of the century to provide navigation. In general, the offers given most serious consideration were those made by the power companies which were already serving the area. These companies, incidentally, ultimately combined in the vast Commonwealth and Southern holding company which later spearheaded the attack on TVA. (3) Those who sincerely wanted cheap fertilizer for the farmer. This group included the Southern farm bloc leaders to whom fertilizer

[12] *Burns Report*, 275–287.

[13] "Examination and Survey of the Tennessee River," 64 Congress, 1 session, *House Documents* (1916), no. 1262, serial 6979.

[14] "Report on Nitrates and Nitrate Plants," 66 Congress, 2 session, *House Reports* (1920), no. 998, serial 7654.

[15] 66 Congress, 2 session (1920), S. 3390 and H. R. 10329. See *Congressional Record*, 59:4782–4784, 8074 (1920).

[16] *Congressional Record*, 60:3873–3879 (1920).

represented one of the primary expenses of farming. It also included some agrarians who knew little about fertilizers, but who regarded the fertilizer industry as another Wall-Street-controlled trust out to gouge the farmer. (4) Those who wanted to gain control of "The Shoals" for private industrial development by the electro-chemical industry.

Considering the general political and economic environment of the 1920s it is remarkable that the various attempts during that period to dispose of Muscle Shoals to private interests were unsuccessful. Except for a brief period when the impression was current that the Shoals properties were valueless, takers were plentiful. But their offers did not seem to satisfy Congress. The basis for the repeated rejection of the many bids received varied somewhat, but certain general principles can be identified. The primary reason for the rejection of all private bids was that not one was fair to the government. Having spent well over one hundred million dollars at Muscle Shoals, a majority of Congressmen found themselves unable to agree to propositions which appeared to return to the government only a few million a year, while the concessionaire had prospects of a tremendous power supply which at going rates would have resulted in substantial profits. Moreover, most of the offers failed to guarantee fertilizer production or to take the national defense requirements for nitrates into account. Although the majority of Congress favored the general idea of private development, the terms of the private offers were so inadequate as to permit the rallying of a majority to defeat acceptance.

The dilemma which many Congressmen faced is illustrated in "The Minority Views of Mr. James," expressed in the report of the Joint Committee, organized in 1926 at the behest of President Coolidge to consider leasing proposals then current. Charging that there had been collusion between the majority of the committee and the "Power Companies of the South" (whose offer the committee recommended for acceptance) Mr. James concluded:

> We have invested millions of dollars at Muscle Shoals, an investment which, if placed in the hands of a lessee who will utilize it in good faith for its intended purposes, offers hope, very reasonable hope I believe, for important benefits to agriculture. But, if we turn it over to the Alabama Power Company and its associates, who for 10 years have tried repeatedly to find some trick which they could work in order to get the power and avoid the fertilizer risks, we are indeed blind and simple-minded. Their offer bears the earmarks of an unconscionable contract for agriculture—the leopard cannot change his spots, and I for one will never agree that the way to help agriculture in its distress is to betray it into the hands of the Alabama Power Company for the price of a few million dollars. . . . When the people ask us just when we are going to use our property to free the country from its dependence upon Chile for nitrates and when we are really going to have some cheaper fertilizers made at Muscle Shoals for the farmers, . . . we can only reply, "Not till the Power Trust permits us to do so."[17]

Vociferous objection to private offers was always forthcoming from that small but active group in Congress that since the turn of the century had been spearheading the conservation movement. The members of this group were suspicious of the "power trust" and as a matter of course voted against offers which were concerned primarily with the power aspects of Muscle Shoals. Thus in the House, where the agrarian group was particularly strong, the vote was repeatedly against proposals which did not *guarantee* fertilizer production. This guarantee was just as consistently absent from the bids. This House viewpoint is reflected in the instructions which the House Military Affairs Committee of the 69th Congress gave to its own subcommittee assigned to review pending offers:

> That the purchasers, lessees, or users of the property shall be obligated in the strictest terms to the manufacture and sale to the public of fertilizers in time of peace. . . . That any bid must contain a provision for the forfeiture of the power rights and fertilizer provisions if there is any failure to produce nitrates in the amount of at least 40,000 tons per year. . . .[18]

A further factor in the rejection of private offers for Muscle Shoals was the frequent jealousy among several private interests who were not content to have a competitor capture this plum. The power interests opposed the chemical industry, while all of them, together with their financial Wall Street affiliates, attacked Henry Ford when he offered to buy the property at a figure which was probably less than its reasonable salvage value.

While these efforts were being made to dispose of Muscle Shoals, Senator Norris repeatedly introduced his proposals for public operation. Other

[17] "Muscle Shoals," 69 Congress, 1 session, *Senate Reports* (1926), no. 672, pt. 2, serial 8525, 14–15.

[18] *Congressional Record*, 68:5837 (1927).

bills for public operation were also introduced from time to time, but Norris remained the persistent champion of public operation, introducing a total of eight bills. The first Norris bill was introduced on April 10, 1922, and thereafter every Congress saw at least one Norris bill introduced until in 1933 his eighth attempt became the TVA Act.[19] As was to be expected, numerous clarifications occurred in the process of hearings and repeated reintroduction, and variations of administrative importance occurred from draft to draft. The first bill authorized the construction and operation of fertilizer "laboratories and experimental plants." It stated that the policy of the bill was to prevent monopoly and price discimination by the fertilizer industry through competitive sales of Muscle Shoals products direct to farmers or to farmers' organizations. Sales of "complete" fertilizers as well as ingredients were approved. And power revenues were to be available for the support of fertilizer operations. Munitions production was, of course, also authorized. The Senate Committee on Agriculture and Forestry reported the bill through its chairman, Senator Norris, who stated in the report: "In advocating its passage, we hold no will-o'-the-wisp to deceive and mislead the people . . . . We believe the extraction of nitrogen from the air can be cheapened, but we cannot guarantee it."[20]

The first four Norris bills were quite similar; the principal variation from the point of view of fertilizer production related to who was to operate the plants—a government corporation or the Secretary of Agriculture.

The fifth version, introduced on December 5, 1927, began to anticipate the agricultural provisions of the TVA Act in the language of section 5 (a) and (b) which is almost identical with comparable provisions of the TVA Act. When this fifth Norris bill reached the House, the committee reported out an "amendment in the nature of a substitute" and wrote in the Morin Bill[21] which also provided for public operation. The fertilizer provisions of this bill stemmed from the strong feeling that fertilizer production must be assured. It is also to be noted that the Morin Bill mentions "concentrated" fertilizers and specifically authorizes "phosphoric acid and potash" production. In addition, the Morin Bill allowed the corporation to "donate not exceeding 5 per centum of the total product . . . to be fairly and equitably distributed through the agency of county demonstration agents, agricultural colleges, or otherwise as the board may direct for experimentation, education, and introduction of the use of said fertilizers in cooperation with practical farmers so as to obtain information as to the value, effect and best methods of use of said fertilizers. . . ." This provision, only slightly changed, became section 5(a) of the TVA Act, and established the legal basis for TVA collaboration with the land-grant colleges. The conference committee appointed to resolve the divergence between the Morin and Norris Bills worked out a satisfactory joint bill which was passed on May 28, 1928, and sent to the President. Congress adjourned shortly thereafter, and the bill was "pocket vetoed" by President Coolidge. The sixth Norris Bill was enacted by Congress but vetoed by President Hoover,[22] and the seventh bill never reached the floor of Congress. The eighth Norris Bill became the TVA Act and was approved by President Roosevelt on May 18, 1933.

With respect to agriculture, the purposes of the Act are stated in the preamble as including ". . . reforestation and the proper use of marginal lands . . . agricultural . . . development . . . and the operation of government properties at and near Muscle Shoals . . ." But the specific language of the statute itself is limited more strictly to fertilizer research and production. Thus Section 5 of the TVA Act (as amended) provides that the Board is authorized:

> To contract with commercial producers for the production of such fertilizers or fertilizer materials as may be needed in the government's program of development and introduction in excess of that produced by government plants. . . .
>
> To arrange with farmers and farm organizations for large-scale practical use of the new forms of fertilizers

[19] The first Norris bill was proposed in 67 Congress, 2 session (1922), S. 3420; the second, 68 Congress, 1 session (1924), S. 2372; the third, 69 Congress, 1 session (1926), S. 2147; the fourth, 69 Congress, 2 session (1927), S.J. 163; the fifth, 70 Congress, 1 session (1927), S.J. 46; the sixth, 71 Congress, 1 session (1929), S.J. 49; the seventh, 72 Congress, 1 session (1931), S.J. 15. The eighth became the TVA Act, *United States Statutes at Large*, 48:58.

[20] "Rejecting Bids for Acquisition of Muscle Shoals," 67 Congress, 2 session, *Senate Reports* (1922), no. 831, serial 7951.

[21] "Muscle Shoals," 70 Congress, 1 session, *House Reports* (1928), no. 1095, serial 8837.

[22] *Congressional Record*, 74:7046 (1931).

under conditions permitting an accurate measure of the economic return they produce.

To cooperate with National, State, district or county experimental stations or demonstration farms, with farmers, or landowners, for the use of new forms of fertilizer or fertilizer practice during the initial or experimental period of their introduction, and for promoting the prevention of soil erosion by the use of fertilizers and otherwise.

(d) The Board . . . is authorized to manufacture and sell fixed nitrogen, fertilizer, and fertilizer ingredients. . .

(e) Under the authority of this Act the Board may make donations or sales of the product of the plant or plants operated by it to be fairly and equitably distributed through the agency of county demonstration agents, agricultural colleges, or otherwise as the Board may direct, for experimentation, education, and introduction of the use of such products in cooperation with practical farmers so as to obtain information as to the value, effect, and best methods of their use.

This language and several brief clauses in other parts of the law provide the essential authority for the TVA agricultural program. The Muscle Shoals fertilizer problem, not regional resource development, is the primary focus of these provisions. Their interpretation to permit an approach to comprehensive regional agricultural development is a tribute to the TVA Board, and was made possible by the fortuitous and unanticipated relationship of fertilizers to Tennessee Valley agriculture.[23]

The legislative history of the TVA Act helps to explain why TVA's agricultural program has placed such great emphasis on fertilizers and soil fertility, almost to the exclusion of social and economic influences. It illustrates, too, how various non-rational factors introduced in the formative stages of a statute can color and shape its subsequent administration, and make difficult the attainment of the real objectives of the legislature.

Through the years of debate over what to do with the Muscle Shoals facilities, the emphasis on nitrates was broadened to include fertilizers in general. Thus it was legally possible for TVA to stress phosphate fertilizer in its research and production activities. With phosphate as the foundation of its program, it was then logical and sound to build a superstructure which emphasized agricultural readjustment based upon crop rotations including legumes, grasses, and other cover crops to control soil erosion and to utilize the rainfall of the region more effectively. The language authorizing fertilizer experiments and demonstrations with farmer participation was broad enough to permit TVA to sponsor a "test-demonstration program" designed to secure the adoption of better farming practices within the region, keyed to fertilizer use. It was thus fortunate that various circumstances permitted TVA to interpret and adjust the language of the law to begin to meet some of the pressing needs of its basic regional objectives. But there are limits to how far an administrative agency can move in this direction, and it is clear that the geographic ambivalence of the agricultural sections of the TVA Act has continued to plague TVA in carrying out and formulating its programs and policies with respect to agriculture.

[23] See Norman Wengert, "The Land—TVA—and the Fertilizer Industry," *Land Economics*, 25:11 (February 1949).

RUSSIAN EXPANSION IN THE LIGHT OF TURNER'S STUDY OF THE AMERICAN FRONTIER

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In 1904, Frederick Jackson Turner wrote, "If, with our own methods of the occupation of the frontier, we should compare those of other countries which have dealt with similar problems—such as Russia, Germany, and the English colonies in Canada, Australia, and Africa—we should undoubtedly find most fruitful results."[1] Note that among these examples Russia suggested itself first to Turner. It is with this suggestion in mind that the Russia in Asia Project at the University of

[1] This article was presented at the meeting of the Pacific Coast Branch, American Historical Association, at Stanford, on December 28, 1951.

F. J. Turner, "Problems in American History," in *The Significance of Sections in American History* (New York, 1950), 19.

Washington is seeking to investigate certain problems connected with Russian expansion in Asia. However seriously Turner meant the passage quoted, it is the aim of this paper to show that in relation to the problem of Russian history, it has validity. In support of this assertion it is intended, first, to recall certain formulations of Turner on the one hand, and some of the great masters of Russian history, which suggest that the Turner hypothesis might be usefully applied to Russia, on the other; and second, to indicate how this application might be initially attempted, with some corroborative evidence from the limited field of study of our project at the moment.

In his familiar paper of 1893, entitled, "The Significance of the Frontier in American History," Turner asserted: "The existence of an area of free land, its continuous recession, and the advance of American settlement westward, explain American development."[2] The effects of the frontier, Turner thought, included the promotion of a "composite nationality" of different stocks; the creation of a "nationalizing tendency" simultaneous with the creation of what he called "sections;"[3] and the encouragement of democracy and individualism. The frontier, Turner believed, served as a "safety valve" for the discontent of the Eastern or more settled regions (wherever they were at the given moment) and its disappearance therefore was closing the valve, with consequences which he implied rather than described. It is clear that Turner's chief emphasis in this frontier thesis was on free land. It is in the sense of a process of encroachment of mainly agricultural settlement on an area of receding free land that the term "frontier" is used in this paper.

In the last quarter-century there has been a tendency to treat Turner as if he were a period "fashion" in historiography. Many industrious scholars attacked this or that part of the thesis with a vehemence often based on misunderstanding, or complained that Turner did not formulate a thesis about something else than what he actually did.[4] Nevertheless the acceptance, qualified or not, of the Turner thesis by most American historians is undeniable, and for two generations has given rise to fruitful research.

The existence of some parallels between the American westward movement Turner described and the Russian movement to the East is obvious, and has occasioned many comparisons of Russian and American pioneers. However, we must be careful to regard the frontier as a process acting upon a certain economic and political base, and inquire into the nature of the base in each case. In the early nineteenth century, Russia was an absolute monarchy with an economy based on serf agriculture; while America was a republic with an economy resting largely on free farming (except for the South, where the difference from Russia was much less marked). Can we then expect the old regime in Russia to have felt the effects of a frontier process at all? Deferring our answer to the former question, let us notice briefly what some outstanding historians of Russia have said in respect to the latter.

The greatest of Russian historians, V. O. Kliuchevskii, had by the 1880s come to visualize the story of his country as one in which the process of colonization and the frontier played not only a significant, but a central role. In his *Course of Russian History* he wrote, "Russia's history, throughout, is the history of a country undergoing colonization. . . . Migration, colonization, constituted the basic feature of our history, to which all other features were more or less directly related."[5] His gifted pupil, Paul Miliukov, observed to an American audience in 1903: "Both Russia and the United States have been colonized . . . in recent times. Hence the settlement and the exploitation of the natural resources of . . . [their countries] form the very warp of their historical texture. Most of the important features of their economic, social, and political development must be referred to this process of colonization."[6] Fi-

[2] Turner, "The Significance of the Frontier in American History," in *The Frontier in American History* (New York, 1920), 1 ff.

[3] See Turner, "Geographical Influences in American Political History," in *Sections*, 183: "The frontier and the section are two of the most fundamental factors in American history. The frontier is a moving section, or rather a form of society, determined by the reactions between the wilderness and the edge of expanding settlement; the section is the outcome of the deeper-seated geographical conditions interacting with the stock which settled the region."

[4] See Minnie E. Cureton, "The History of the Criticisms of the Turner Thesis," Ph.D. Thesis (Stanford University, 1949).

[5] V. O. Kliuchevskii, *Kurs Russkoi Istorii* (Moscow, 1937; reprint, Ann Arbor, 1948), 1:20–21. See Morris Zaslow, "The Frontier Hypothesis in Recent Historiography," in *Canadian Historical Review*, 29:2 (June 1948), for a brief comment.

[6] P. N. Miliukov, *Russia and Its Crisis* (Chicago, 1905), 5.

nally, the late B. H. Sumner wrote at the outset of his *Survey of Russian History*, "throughout Russian history one dominating theme has been the frontier; the theme of the struggle for the mastering of the natural resources of an untamed country, expanded into a continent by the ever-shifting movement of the Russian people. . . ."[7] These statements were not casual obiter dicta, but the fruit of mature reflection by great historians as to the essence of the problems which faced them.

The Russian "colonization" process which Kliuchevskii studied involved the occupation of the upper Volga region around Moscow and the expansion of Novgorod, both in full course by the twelfth century. Discussing the subsequent settlement of an enlarging area West, East, but chiefly South toward the Black Sea, Kliuchevskii indicated how the need for settling and defending open borders required centralized state power and attachment of the peasantry to the land. Thus he showed how the frontier contributed to the growth of serfdom and autocracy in the Muscovite state, and hence indirectly to popular pressures against such an onerous regime. One might suggest further that the large-scale flight of the peasants to the free land and free Cossack bands of the South drained off forces of discontent—forces which, operating on the fringes of Muscovy in the revolts of Razin and Pugachov, were dangerous enough, but if concentrated in the heart of Russia might have brought disaster. The role of "safety valve" was thus filled by the vast area of the steppe Ukraine, which in modern times developed in the course of resettlement as a "section" in the Turnerian sense, by the middle and lower Volga basin and the Don-North Caucasus region; and when in the nineteenth century these territories had been fully occupied, the peasants were beginning to turn to sparsely peopled Siberia for outlet.

The facts regarding Siberian migration are especially noteworthy in view of the widespread popular assumption that Siberia was somehow settled by people sent by government order, usually in shackles, as part of a foreign policy aimed at seizing Chinese territory. It is true that from the seventeenth century on there were many men of the serving class, prisoners, and state peasants sent to Siberia by the government, but these compulsory measures proved inadequate to the task of colonizing this newly-acquired empire of Northeast Asia. George V. Lantzeff, who has, with his teacher, Robert J. Kerner, studied the Siberian seventeenth century carefully, tells us that even this early "the bulk of the permanent Russian population in Siberia . . . was made up of peasants who went there to seek free land, to escape creditors and government regulations, to flee from the menace of servitude."[8] It was indeed just in the mid-seventeenth century that serfdom was becoming legally fixed, and some of those peasants fleeing from its rigors were already forming a thin but steady stream to Siberia, which continued to grow throughout the eighteenth century. This confronted the government with the choice between its conflicting desires to colonize Russian Asia and to safeguard the serf system. It did both by tolerating the illegal migration, often legalizing it after the fact as the English Parliament did with non-juring Dissenters.

This long-established policy of toleration was reversed by the law of 1812 forbidding any migration of state peasants and by simultaneous attempts of the government to force the return of illegal emigrants. However, the pressure of both serf and state peasants was intensified as the population of European Russia grew. In the middle third of the nineteenth century 350,000 state peasants were assisted to reach Siberia under the policy of Minister of State Domains Count Kiseliov. And still the number of free emigrants kept pace with the number of those whom the state was willing to help. In summing up the results of governmental colonization policy before Emancipation, a Tsarist official writes, "All such changes in state policy . . . in fact were only very imperceptibly reflected in the main movement of the people—the free migration of the unfree peasants."[9]

The Emancipation of the serfs in 1861 greatly accelerated the whole process of rural transformation. From the Emancipation to 1914, 5,100,000 migrants came to Asiatic Russia, of these 4,500,000 being peasants, the remaining 600,000 prisoners,

[7] B. H. Sumner, *Survey of Russian History* (2 ed., London, 1947), 9. On p. 17 there are two direct quotations from Turner which Sumner finds useful in describing the Russian frontier.

[8] G. V. Lantzeff, *Siberia in the Seventeenth Century* (Berkeley, 1943), 155.

[9] Unsigned article, "Krest'ianskoe Pereselenie i Russkaia Kolonizatsiia za Uralom," *Aziatskaia Rossiia*, Izdanie Pereselencheskago Upravleniia Glavnago Upravleniia Zemleustroistva i Zemledeliia (St. Petersburg, 1914), 1:450.

criminal and political.[10] Though its numbers were small compared with the total Russian population which passed 100,000,000 in the nineteenth century, this migration from 1896 to 1915 alone removed, for example, almost 13 percent of the inhabitants of the overcrowded Ukraine.[11] It is this movement, primarily peasant in character, which the Russia in Asia Project is endeavoring to study in the light of Turner's work.

Except for the newly acquired Russian Far East, the government did not alter its negative migration policy at the time of the Great Reforms. Beginning with 1881, however, the realities of the situation forced a gradual change in the official attitude. In that year, "temporary rules" for migrants were formulated, and these were broadened by the law of 1889. When the building of the Trans-Siberian Railway was begun, the shift in state policy became more pronounced. The Committee on the Siberian Railway, presided over by Nicholas II himself, heard its imperial chairman speak of "the extreme undesirability of the compulsory return of emigrants."[12] In 1896 a special Emigration Administration was set up. Increased loans, credits, exemptions, and technical aid were extended to the peasant families moving in a great flood into Siberia.

At last, in 1904, migration was made completely free, though state aid was still to be offered only to those who accepted official direction. After a check in the migration movement during the Russo-Japanese War and the agrarian disorders of the Revolution of 1905–1906, a last period of frantic settlement of Siberia ensued before the World War heralded the fall of the Tsarist regime. During this era zemstvos, the State Duma, and the bureaucracy assisted and expedited migration.[13] With or without outside aid, the peasants continued their rush toward the riches, the uncertainties, and the greater freedom of the 400-mile wide East-West strip of Asiatic Russia which even before the Trans-Siberian Railway was built on it, had been the area of fertile soil and boundless opportunity. That the peasants so regarded this region is evidenced by a government pamphlet of 1896 combating the popular belief that "the lot of the settler in Siberia was an easy one," and urging caution on those who expected their troubles to end at the Ural Mountains.[14]

What were the results of this movement? Peasants who in the over-populated black-earth districts of South Russia had sowed an average of 2½ *desiatinas* of land, in the new territory sowed 3–4 desiatinas immediately, and after 4–7 years, 5–8 desiatinas.[15] If we take the average of all Asiatic Russian lands, the combined tillage and pasturage of the emigrant who had had 3 desiatinas at home, comprised 11 desiatinas after 7 years. There was a corresponding rise in personal property; the average emigrant family more than tripled its possessions in 11 years. As the Siberian migrant grew in affluence, his agricultural technique also improved. He accepted complex machines of whose very existence he had been unaware at home; he relied on the local agronomist for aid and advice. He showed "an exceptional capacity for self-help," a new and rigorous attachment to "the idea of the actual economic possession of one's own land . . . and the inviolable permanence of [individual] tenure."[16]

In 1914 a government demographer concluded:

> The class composition of the trans-Ural population is extremely homogeneous. Russian Siberia at the present time is a solid peasant sea. . . . Representing, in the person of the old settlers, the descendants of daring escapees from Russia proper, having moved here under harsh conditions sometimes even before the conquest of the region, and in the person of the recent settlers, the most energetic and enterprising representatives of their milieu—for only such migrants become firmly acclimatized and strike root in new regions—the Siberian peasants indeed differ from the remaining mass of the Russian peasantry . . . in their greater steadfastness . . . in the struggle with [nature] . . . their greater mobility and readiness to accept every kind of innovation.[17]

[10] See Table in Frank Lorimer, *The Population of the Soviet Union* (Geneva, 1946), 25, based on Obolensky-Ossinsky.

[11] George Pavlovsky, *Agricultural Russia on the Eve of the Revolution* (London, 1930), 181.

[12] *Aziatskaia Rossiia*, 1:460 (1914).

[13] The zemstvos were the elected provincial and district councils set up by the reform of 1864; the State Duma was the lower house of the legislative assembly, elected four times from 1906 to 1917.

[14] *Sibirskoe Pereselenie* (St. Petersburg, 1896), 3. The realities of life for Siberian migrants were often indeed harsh, and contributed to a considerable though varying amount of returnee traffic.

[15] A *desiatina* is usually considered equivalent to 2.7 acres.

[16] Data and quotes from unsigned article, "Sibirskie Pereselentsy," *Aziatskaia Rossiia*, 1:196–199 (1914).

[17] N. V. Turchaninov, "Naselenie Aziatskoi Rossii," *Aziatskaia Rossiia*, 1:74–75 (1914).

It became clear that the Siberian peasant was becoming a different sort of man than he had been able to be at home. He had often come to an unknown land without government aid, to avoid the heavy hand of officialdom in matters of land tenure, taxation, recruitment, religion, or social thought. Having come without help, he was determined to continue to do without it. He was becoming more self-reliant, independent, and more of an individualist; at the same time he was more like his neighbors than he had ever been, even though his fellow-villagers might come from a dozen different provinces of European Russia.[18]

To use Turnerian terms, then, Great, White and Little Russians mixed to form a "composite nationality" in Siberia, even though the problem of assimilating more diverse European stocks was never posed; a "nationalizing tendency" could be seen as accompanying this loss of particularist ties; most striking of all was the growth of sturdy rural individualism on the Russian frontier, where there were no great landlords, few poverty-stricken peasants, but for almost all settlers greater riches, material and spiritual, than they had had behind the Urals.

Finally, did the Russian frontier serve as a "safety-valve" for the Tsarist government and social system? Even through the last feverish period of state-approved migration, the sharply ambivalent official attitude toward colonization remained. On the one hand Tsarism saw that the movement to Asia relieved home pressures, so that the suspicion was bruited in the Duma that "migration had been chosen by the government as the chief means of resolution of the land question in Russia proper;"[19] on the other, the government recognized the creation on the Southeast and Eastern frontier of a new and dangerous attraction which threatened the attitudes, the economic system, the way of life on which the old regime was built. Thus the Russian frontier helped save Tsarism for a time, but at a heavy price. In part as a result of the frontier process, an independent yeomanry was being substituted for the loyal and subservient peasantry which had been the traditional bulwark of the Romanovs.

In the latter nineteenth century there appeared another outlet for migration, whose causes were similar to the peasant flight over the Urals, but whose effects were different. While those who wanted to continue farming away from the stifling conditions of the central region went to Siberia, those who were ready to give up farming went to the swiftly growing industrial cities. There they became swiftly proleterianized, easy victims to Western-style revolutionary propaganda before they had scarcely time to think of trade unions. The danger of the urban poor was dramatically manifested in the disorders of 1905, but this danger had been suspected, and the loyalty of the peasantry was relied on to offset it. Peasant loyalty however proved a mirage in 1905–1906. Some enlightened bureaucrats, especially Stolypin, indeed tried to build a "strong and sober" peasantry in Tsarism's eleventh hour; and Stolypin's personal inspection of Siberian colonization in 1910 indicates that he had some notion of the relation of the frontier process to his objective.[20] During his tenure of office—the period of greatest Siberian migration—peasant outbreaks declined almost to the vanishing point. Once more, however, the frontier showed its double cutting edge. For though agrarian pressures were being somewhat relieved, another effect of the eastward migration of millions was that many of the "strong and sober" were by 1917 in the border regions, unable to affect directly the fate of the turbulent black earth belt.

Part of the explanation for the course of the Revolution of 1917–1921 may be sought in this circumstance. For example, the Socialist Revolutionary Party gained phenomenal strength in both city and country during 1917, but it was the rural elements which clung to it longest, and Lenin was driven to adopt that party's land program as a temporary expedient to win the peasants' acquiescence in a Bolshevik regime. These facts have been accounted for by peasant "land hunger;" but is it not probable that this age-old desire was sharpened by a newer taste or vision of frontier self-sufficiency? The Civil War has so far been treated, by both non-Soviets and Soviets, largely as military history. With only passing attention to the "failure of the Whites to satisfy the peasants," many writers implied that the Whites managed to hold Siberia and South Russia simply because they were farthest from Red-held Moscow.[21] These areas were, however, also the areas

[18] See *ibid.*, esp. p. 68, for evidence of different provenance of the same settlements.

[19] *Ibid.*, p. 465.

[20] P. A. Stolypin, *Die Kolonisation Sibiriens* (Berlin, 1912).

[21] See, for example, W. H. Chamberlin, *The Russian Revolution* (New York, 1935), 2:195 and 255.

of free colonization. It has been said that peasants never start a successful revolution, but one may assert that in the case of France in the 1790s, for example, they stopped one. The uneasy intuition that many of us have been unable to down that the Red victory was inevitable, may have hampered our efforts to find out how close the Russian peasantry came to stopping the Russian Revolution or perhaps to confining its Bolshevik phase to the central core of Russia.

There is no reason to suppose that the coming to power of the Soviets has brought an end to the operation of the frontier process in Russia. The reported preference of many Soviet youth for jobs in Siberia, for example, is unlikely in the long run to strengthen the system of political control most effectively applied in the Moscow region. While the Soviets have vigorously backed development of the Siberian area, one may doubt that even that authoritarian government can entirely evade the manifold effects of the frontier process, with its combined support and threat to the existing regime.

At the end of his survey of modern Russian historiography Anatole G. Mazour has recently singled out, as topics most needing our attention, the study of "the growth-process of the Russian Empire . . . the foreign and colonial policies of the Imperial government, particularly eastward (Siberian history is still mostly an unexplored field)."[2] In accomplishing these vital tasks, historians of Russia may be aided by examining once again the immensely suggestive work of American historians on the fascinating process of American colonization.

[2] A. G. Mazour, *An Outline of Modern Russian Historiography* (Berkeley, 1939), 106.

THE OPIUM POPPY AS A FOOD AND SPICE IN THE CLASSICAL PERIOD

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Some day the full story of the foods of the Greeks and Romans will be written, and when it is, many curious lacunae will be filled in. One of these is the alimental use of the seeds of the opium poppy, a topic which is accorded no more than a paragraph or so in such reference works as Alphonse de Candolle's *Origin of Cultivated Plants* and in August Steier's article on the poppy in Pauly-Wissowa-Kroll-Mittelhaus.[1] No article in any scholarly journal has ever been devoted to this subject. Interest in the history of opium, on the contrary, has stimulated scholarly speculation regarding the soporific drug of Homer and the so-called "poppy juice" of the Hippocratic Corpus, and this has perhaps diverted attention from the more prosaic but equally important employment of the seeds as a food and as a spice. Certainly a plant product that was of sufficient significance to secure listing in the Edict of Diocletian merits more than the casual treatment that it has thus far been granted.

In classical Greece the poppy was known as *μήκων* (Doric *μάκων*) and in Italy as *papaver*.[2] The earliest reference to distinct types is found in the Pseudo-Hippocratic *De diaeta*,[3] where

[1] Alphonse de Candolle, *Origin of Cultivated Plants* (New York, 1886), 397–401; and August Steier, "Mohn," *Real-Encyclopädie der classischen Altertumswissenschaft*, 15:2433–2446.

[2] *μήκων* is cognate with German *Mohn* (OHG *māgo*) and therefore of Indo-European origin, but the exact source is unknown. *Cf.* E. B. Boisacq, *Dictionnaire étymologique de la langue grecque* (ed. 3, Heidelberg, Paris, 1938), 632; Otto Schrader, *Reallexikon der indogermanischen Altertumskunde*, ed. 2, 2:68; Johannes Hoops, *Waldbäume und Kulturpflanzen im germanischen Altertum* (Strassburg, 1905), 350, and "Mohn," *Reallexikon der germanischen Altertumskunde* (Strassburg, 1911–19), 3:234; Ernst Zupitza, *Die germanischen Gutturale* (Berlin, 1896), 135. The adjectival form was *μηκωνικός* or *μηκώνειος*. On the Late Greek forms, *cf.* Bernhard Langkavel, *Botanik der spätern Griechen vom iii. bis xiii. Jahrhunderte* (Berlin, 1866), 29.

The word *papaver* is probably a participial formation, originally in the form **papā-wes*, "blown up, inflated," based on the root **pap-*. *Cf.* Alois Walde, *Lateinisches etymologisches Wörterbuch* (ed. 3, Heidelberg, 1949), 2:249. The adjectival form was *papaveratus* or *papavereus*.

[3] Pseudo-Hippocrates, *De diaeta*, 2.45. The white type is also mentioned in *Hippocratis opera*, 2.99, 583, 691 Kuehlwein and Ilberg.

black and white types are mentioned, that is, the black-seeded and white-seeded varieties of the opium poppy, *Papaver somniferum* L. Pseudo-Theophrastus is the first to describe any species except the opium poppy.[4] He mentioned the horned poppy, *Glaucium flavum* Crantz, under the name of *μήκων κερατῖτις*, the field or corn poppy, *Papaver rhoeas* L., under the name of *μήκων ῥοιάς*, and the *μήκων ἡρακλεία*, not readily identified, in addition to the black-seeded opium poppy. To these species Dioscorides and Pliny added still others, for example, the bastard poppy, *Papaver hybridum* L., and the sand poppy, *Papaver argemone* L.; and later writers expanded the list even further. There was a marked tendency, moreover, to extend the name of the poppy to plants which were not members of the genus *Papaver* on the basis of a superficial resemblance.

Of all those plants to which the names *μήκων* and *papaver* were applied, the opium poppy is the only one that was of any alimentary importance in ancient times in the Mediterranean region.[5] The others were used almost solely in the field of medicine. There is little doubt, moreover, that the opium poppy was a familiar plant of some significance at a very early epoch, for the names now current in Europe go back to common Indo-European roots. In western Europe cultivation of this species probably began as early as the Neolithic Age, for poppy seeds in large quantities have been found at various Swiss and north Italian pile-dwelling stations,[6] and it is difficult to believe that such masses of seeds could have been secured by the casual collection of wild plants.

The carbonized capsules of the seeds found at these prehistoric sites suggest a form intermediate between the opium poppy (*Papaver somniferum* L.) and *Papaver somniferum* var. *setigerum* DC., and most botanists until recently have therefore been of the opinion that the opium poppy was developed from the latter type and attained its present form only within historic times.[7] This presumed parent form, *Papaver setigerum*, is native in Europe, but occurs chiefly in Greece, on the islands of Cyprus, Sicily, and Corsica, and in Algeria and Spain. More recent research has modified the generally accepted view regarding the origin of the opium poppy. M. Vesselovskaya regarded *Papaver setigerum* and *Papaver somniferum* as independent, although genetically related, species which go back to a common ancestor.[8] The relict branches of this presumed ancestor, she said, are *Papaver setigerum*, which occurs wild in the western part of the Mediterranean region, and the group of dehiscent poppies belonging to the species *Papaver somniferum*, found partly as a cultivated form and partly in a semiwild state over most of the area of the cultivated form. She viewed with doubt the hypothe-

[4] Pseudo-Theophrastus, *Historia plantarum*, 9.1.2.3–5 The *ἐπιτηλίς* of Nicander, *Theriaca*, 852, is probably *Glaucium flavum*. *Cf.* W. Thiselton-Dyer, in *Journal of Philology*, 33:204–205 (1914).

[5] Theophrastus, *Historia plantarum*, 9.12.4, says that the field poppy resembled chicory and was therefore even eaten. Paulus Aegineta (7.3 s.v. *μήκωνες*), as mentioned in my text, says that the seeds were mixed with honey, like those of the opium poppy, but in a much smaller proportion. The leaves of this species are still eaten today. *Cf.* A. Paillieux and D. Bois, "Les plantes alimentaires spontanées en Grèce," *Revue des Sciences Naturelles Appliquées*, 37:1092 (1890). But the plant is not and never has been of any alimentary importance.

[6] *Cf.* Oswald Heer, *Die Pflanzen der Pfahlbauten* (Zürich, 1866), 31 ff.; E. Neuweiler, "Die prähistorischen Pflanzenreste Mitteleuropas mit besonderer Berücksichtigung der schweizerischen Funde," *Vierteljahrsschrift der Naturforschenden Gesellschaft in Zürich*, 50:72–74 (1905), and "Pflanzenreste aus den Pfahlbauten des ehemaligen Wauwilersees [Kanton Luzern]," *Mitteilungen der Naturforschenden Gesellschaft in Luzern*, 9:316 (1924); Schrader, *Reallexikon der indogermanischen Altertumskunde*, 2:68; Max Ebert, *Reallexikon der Vorgeschichte* (Berlin, 1924–32), 8:274; Hoops, *Waldbäume und Kulturpflanzen*, 297, and *Reallexikon*, 3:233; Georg Buschan, *Vorgeschichtliche Botanik der Cultur- und Nutzpflanzen* (Breslau, 1895), 247; Matthäus Much, "Vorgeschichtliche Nähr- und Nutzpflanzen Europas," *Mitteilungen der anthropologischen Gesellschaft in Wien*, 38:217 (1908).

[7] *Cf.* Candolle, *Origin of Cultivated Plants*, 398; Much, "Vorgeschtliche Nähr- und Nutzpflanzen Europas"; Neuweiler, "Die prähistorischen Pflanzenreste . . ."; Buschan, *Vorgeschichtliche Botanik der Cultur- und Nutzpflanzen*, 248; *Ernst H. L. Krause*, "Die Nähr- und Gespinstpflanzen der vorgeschichtlichen Europäer," *Globus*, 68:81 (1895); G. Roeder, in Ebert, *Reallexikon der Vorgeschichte*, 14:341; Hoops, *Waldbäume und Kulturpflanzen*, 334. G. Schweinfurth, "Aegyptens auswärtige Beziehungen hinsichtlich der Culturgewächse," *Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrg. 1891* (1891), 665, was one of the few who doubted the derivation of the cultivated poppy from this form.

[8] M. Vesselovskaya, *The poppy, its classification and its importance as an oleiferous crop* (Bulletin of Applied Botany, of Genetics and Plant Breeding, Supplement 56, 1933), 184–188.

sis that the eastern Mediterranean region is the true home of the poppy, because of the poverty of forms and the predominance of recessives in that area, and thought that the primary center of form origination lies in southern Europe, where one finds greater richness and diversity of forms and a predominance of dominants. N. E. Kuzmina accepted the view of Vesselovskaya that *Papaver setigerum* is genetically a close relative of *Papaver somniferum* but not its direct ancestor,[9] but she maintained that the center of origin of the cultivated poppy lies in the western Mediterranean region, whence, as early as the tertiary period, it spread through the Balkan peninsula and from there to Asia Minor. It was in Greece and Asia Minor, she said, that the poppy was first brought under cultivation, the cultivated form then spreading outwards through the territory of the Old World.

It has already been noted that large quantities of poppy seeds have been found at various Swiss and north Italian pile-dwelling sites. There has been much speculation and little agreement as to the use that was made of these seeds. According to Adam Maurizio,[10] the poppy was probably cultivated by the people of the pile dwellings because of its feeble narcotic effect, and not for the extraction of oil from the seeds, as has been assumed.[11] C. Hartwich inclined to the view that even then the seeds were used as a seasoning for foods.[12] This may be so, but as Maurizio said, Braungart went too far in assuming that the seeds of the cultivated poppy were usually used as a seasoning for bread even in the Neolithic Age.[13] Hoops, Neuweiler, Netolitzky, and Roeder all maintained that the seeds were extensively used as a food rather than as a spice, and this view is the more attractive one.[14]

In the prehistoric period in western Europe, accordingly, apparently only the seeds of the opium poppy were utilized, and these primarily as a basic food, possibly also as a seasoning, and perhaps for the sake of the mild narcotic effect. It is reasonable to assume that they were similarly used in prehistoric Greece and Asia Minor, even though concrete archaeological evidence is lacking. It is highly probable, moreover, that opium was known and used in that region some little time prior to the third century B.C., the date of the first literary allusion to the extraction of juice from the capsules.[15] The garden poppy mentioned by Homer was probably the opium poppy;[16] and Steier quite properly was inclined to accept the view of earlier scholars that the soporific drug mentioned by Homer was probably opium.[17] The so-called "poppy juice" of the Hippocratic Corpus, also called *ὑπνωτικὸν μηκώνιον*, was also probably opium, and the drug was often mentioned by later authors simply as *ὀπός* (Latin *opium*).

As for Italy in the historic period, Cato was the first to refer to the cultivation of the poppy;[18] but the poppy is mentioned as a familiar plant in the comedies of Plautus and was traditionally associated with the remote period of the kings.[19] There is actually no valid reason to doubt that

[9] N. E. Kuzmina, *Cytology of the cultivated poppy in connection with its origin and evolution* (Bulletin of Applied Botany, of Genetics and Plant Breeding, series 2, no. 8, 1937), 190–191.

[10] Adam Maurizio, "Brotgewürze," *Naturwissenschaftliche Wochenschrift*, 30 (n.f. 14):225–228 (1915).

[11] For example, by Heer, *Die Pflanzen der Pfahlbauten*, 34.

[12] C. Hartwich, "Über 'Papaver somniferum' und speziell dessen in den Pfahlbauten vorkommenden Resten," *Apotheker Zeitung, 1899*, 9, 13.

[13] Richard Braungart, *Die Urheimat der Landwirtschaft* (Heidelberg, 1912), 372. *Cf.* also Heer, *Die Pflanzen der Pfahlbauten*.

[14] Hoops, *Waldbäume und Kulturpflanzen*, 298; Neuweiler, "Pflanzenreste aus den Pfahlbauten . . . "; 316; Netolitzky, "Neue Funde prähistorischer Nahrungs- und Heilmittel," in *Xenia, Hommage international à l'université nationale de Grèce à l'occasion du soixante-quinzième anniversaire de sa fondation*, 1912, 228; and Roeder, in Ebert, *Reallexikon der Vorgeschichte*, 14:341.

[15] Pseudo-Theophrastus, *Historia plantarum*, 9.8.2.

[16] *Iliad*, 8.306. *Cf.* Candolle, *Origin of Cultivated Plants*, 398; Steier, in *Real-Encyclopädie der classischen Altertumswissenschaft*, 15:2435. 4–21.

[17] *Ibid.*, 2436. 8–22. The soporific drug is mentioned in the *Odyssey*, 4.219.

For the views of early scholars, see Aug. Mar. Riccius, *Dissertationes Homericae habitae in Florentino lyceo ab Angelo Maria Ricco* (Florence, 1741), 3.50; Kurt Sprengel, *Geschichte der Botanik* (Altenburg, Leipzig, 1817–18), 1:18; Aug. Guil. Schlegel, *De geographia Homerica, Comment. Gotting. praemio ornata* (Hannover, 1788), 156; F. A. W. Miquel, *Tentamen florae homericae* (Rotterdam, 1835), 46 ff.; J. B. Friedreich, *Die Realien in der Iliade und Odyssee* (Erlangen, 1856), 182; Wedel, *De nepenthe Homeri*, in his *Exercit. medico philolog.* Dec. VI, Exercit. 10.

[18] Cato, *Agricultura*, 38.4. *Cf.* Pliny, *Natural History*, 18.229.

[19] Plautus, *Trinummus*, 408, and *Poenulus*, 326. *Cf.* Livy, 1.54.6; Pliny, *Natural History*, 19.169; Valerius Maximus, *Factorum ac dictorum memorabilium*, 7.4.2; Polyaenus, *Stratagems*, 8.6.

cultivation of the poppy was continuous in that part of Europe from the Neolithic Age. The poppy is often mentioned by Vergil and other poets as a garden plant.[20] Pliny distinguished three types of cultivated poppy, of which only the black and the white come into question here as varieties of the opium poppy.[21]

The seeds of the opium poppy, especially those of the white-seeded variety, were well regarded by the physicians as an article of food. Pseudo-Hippocrates spoke of them as binding, the black more so than the white,[22] but the white also, although both were nourishing and strengthening. Hippocrates recommended for patients convalescing from acute diseases a diet consisting solely of a concoction made with white poppy seeds, suitably prepared with meal and honey.[23] Galen,[24] although he ascribed no great nutritive value to the seeds, considered them an excellent seasoning for bread, especially those of the white variety, but judged them soporific and difficult to digest if eaten in quantity. Paulus Aegineta said that the seeds of the field poppy, being stronger in their effects than those of the opium poppy, were not eaten by themselves, but were mixed with a considerably larger amount of honey.[25]

As Paulus implied, the seeds of the opium poppy in roasted form were often eaten with honey,[26] especially for dessert, although this practice was no longer observed in Italy in the time of Pliny.[27] They were also much used as a spice on bread.[28] Thus Pliny said that in his day country people sprinkled poppy seed on the upper crust of their bread, making it stick with egg yolk, and seasoned the under crust with celery seed and black cumin to heighten the flavor of the loaf.[29] The Greeks generally called such bread *μακωνίδον ἄρτον* or *μηκωνίας*;[30] and some physicians considered it rather difficult to digest.[31] Servius, somewhat puzzled by Vergil's phrase *cereale papaver*,[32] suggested that the epithet implied that the poppy seed was eaten as a grain, or referred to Ceres' use of opium to induce forgetfulness of pain, or alluded to the practice of sprinkling poppy seed on bread. One of the appetizers at the dinner of Trimalchio consisted of dormice rolled in honey and poppy seed.[33]

The evidence indicates that poppy seed in the early period was more extensively used as a basic food than as a spice. In the classical era it was employed primarily as a seasoning, particularly for bread, and apparently more commonly by the Greeks than by the Romans. It was of distinctly minor importance as a basic food, but was often mixed with honey to serve as a supplementary dish, particularly for dessert. The failure of Apicius, in whose recipes Greek influence is clearly manifest, to employ poppy seed in his fine cookery is significant, as is the absence of special discussion of this item in the *Deipnosophistae* of Athenaeus. This implies that poppy seed was in use primarily among the lower classes, even though well regarded by the physicians. In the time of Diocletian it was a regular market staple, selling at a maximum authorized price of 150 denarii for 1 *kastrensis modius*, or about 8 denarii for a quart, somewhat less than cumin.[34]

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[20] For example, Vergil, *Georgics*, 1.78, 212, 4.131, 545, and *Aeneid*, 4.486. For examples of other poets, see Propertius, 1.20.37; Ovid, *Fasti*, 4.438.

[21] Pliny, *Natural History*, 19.168.

[22] Pseudo-Hippocrates, *De diaeta*, 2.45 (6.544 L.).

[23] Hippocrates, *De ratione victus in morbis acutis*, 407.

[24] Galen, *De alimentorum facultatibus*, 1.31 (258.10 Helmreich) (*exc.* Oribasius, *Collectionum medicarum reliquiae*, 1.29.1, 2). *Cf.* Paulus Aegineta, 7.3 s.v. *μήκωνες*; Simeon Seth, 68 and 135 Langkavel.

[25] Paulus Aegineta, 7.3. *μήκωνες*.

[26] *Cf.* Thucydides, 4.26.8 and scholiast *ad loc.*; Servius on *Georgics*, 1.212. Dioscorides, 4.68.1 W., says that the seeds were used in place of sesame to make a honey mixture.

[27] Pliny, *Natural History*, 19.168.

[28] *Cf.* Galen, *De alimentorum facultatibus*, 1.31 (*exc.* Oribasius, *Collectionum medicarum reliquiae*, 1.29.1); Dioscorides, 4.68.1 W.; Paulus Aegineta, 7.3; Simeon Seth, 135 Langkavel.

[29] Pliny, *Natural History*, 19.168.

[30] For the first form, see Alcman apud Athenacus, 3.110.f. For the second, Soranus, 2.46 Ilberg. *Cf.* Galen, *De alimentorum facultatibus*, 1.31, and 12.72 K.; Philostratus, *De gymnastica*, 6.19; Paulus Aegineta, 7.3.

[31] Soranus, 2.46 Ilberg.

[32] Vergil, *Georgics*, 1.212. The same expression occurs in Columella, *Agricultura*, 10.314.

[33] Petronius, 31.

[34] *Edict of Diocletian*, 1.31, 32.

A NEW SYNOPSIS OF AGRICULTURAL HISTORY; A REVIEW OF ABEL'S *AGRARPOLITIK*

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Wilhelm Abel, in *Agrarpolitik* (Goettingen, Vandenhock & Rupprecht, 1951, 419 p., DM 27.00) primarily attempts to indicate desirable agricultural policies and ways of bringing them about; his conclusions, however, are based largely on historical analyses. Moreover, he systematically indicates the theories which contradict those ideas which he accepts or advances as his own. Thus, the book actually contains a survey of the present status of the science of agricultural history in Europe. Any judgment concerning the accuracy of the statements under consideration will be restricted to the conclusion. We shall however indicate on whom the author is based and note the instances in which the author produces original ideas of his own.

The author deals primarily with western, northern, and central Europeans as well as with the people of the United States, and not at all with the Chinese, Japanese, Hindus, Hittites, Hebrews, Etruscans and American Indians. The author's concepts concerning the agriculture of some other peoples and epochs may first be enumerated.

Prehistoric Times. Three theories are considered: (1) The regularity of the sequence of the three stages, hunting, shepherding, and crops-raising. For more than a century this theory has been put forward again and again. Then Eduard Hahn became the chief scholar to deny its validity and Abel accepts his viewpoint (p. 292). (2) The universality of original land communism. This view had been put forward by Sir Henry Sumner Maine, Emile Louis Victor de Laveleye, and many others, but has been increasingly rejected, for example, by Baden Henry Baden-Powell, George von Below, Gudmund Hatt and others. The book decides in favor of the latter (p. 115). (3) The origin of seignorial property. In agreement with Claude Henry de Saint-Simon, Pierre Joseph Proudhon, Eugene Duhring, and Ludwig Gumplowicz, Franz Oppenheimer had insisted on its having originated by conquest. In contrast to this theory of single origin, Abel, as others before him, points to the convergence of many factors in the origin of seignorial property (p. 160–161).

Oriental and Classical Antiquity. Three theories in particular are approved by our author: (1) The importance of dikes, ditches, and canals to Mesopotamian and Egyptian agriculture (p. 226); (2) The relationship between the decrease in population and the decline of rural prices in the Hellenistic epoch, as put forth especially by Fritz Heichelheim (p. 373); and (3) The exhaustion of the soil as one of the causes of the decline of the Roman empire, asserted at least one hundred years ago by the agricultural chemist, Justus von Liebig, and recently considered acceptable by Wladimir Simkhovitch (p. 221).

European Peoples of Peripheral Location. Three groups enter the picture: (1) Arabs. According to Walter Clay Lowdermilk, whom Abel follows, they have been responsible for soil exhaustion (p. 221); (2) Celts. The German agricultural historian, August Meitzen, elaborated a much discussed theory that the old Irish and Westphalian farmhouses were similar in that they contained the human dwelling and the stable under the same roof, isolated from other farmhouses and surrounded by their own fields. Such, Meitzen argued, was the characteristic Celtic dwelling. Many have rejected this theory and so does our writer (p. 230); (3) Slavs. Our author rejects, as others have already done, Meitzen's interpretation of three phenomena as specifically Slavic.

These were: the circular village, where the houses are located in circles around the church, the Russian rural collectivity called mir, and the corresponding Serbian institution, called zadruga (p. 116, 230). As to the origin of the latter Peisker has asserted that because the Byzantine Empire based its tax system on houses many families took lodging together to avoid payment of large taxes. In contrast to this theory Milan Markovic and Dragolioub Novakovitch considered the

zadruga as having its origin in the desire of the Serbs for protection from the Turkish tax collecting system. Abel decides in favor of the former theory (p. 116). Finally our author accepts the concept of the history of the Slavic system of land division as put forward by the well known German rural economist, Max Sering. Originally, the large family, which contained all persons from the father's side, owned land together. This larger unit then was dissolved into smaller units, consisting only of parents and children; at the same time, land was partitioned among these smaller units; out of this act of partitioning among the smaller family units originated the custom of partitioning among individual children (p. 128).

Middle Ages and Modern Times in Western Europe. Here fourteen topics are considered:

(1) The theory of original German rural communism. This theory soon found opponents and recently Gudman Hatt, Rudolf Martini, Hans Martensen and Franz Steinbach have presented new evidence. Our agricultural historian does not simply accept these findings, he combines them in a new way to discredit the old theory. There existed in England and Denmark, Abel argues, ridges that separated the particular lots within a larger field unit; these ridges show that every particular lot of land was cultivated, not as a part of collectively cultivated land, but rather independently (p. 118).

(2) The owners of land in the early Middle Ages. The older theory asserted that they were independent peasants. In contrast, Werner Wittich recently argued that chieftains owned herds and land but disdained crop raising which was done by dependent people. Abel rejects this and accepts the older concept (p. 16).

(3) Medieval peasants' group life. According to the most widely accepted theory, the peasants actually were incorporated into a pyramid of four, increasingly larger, entities. These were: the family, which owned collectively house and furniture, while the father was just the administrative master of the house; the kindred, composed of all members of the larger family related by blood and marriage, a military as well as a religious cult unit; the village community, which took care of the rotation of crops; and the "Markgenossenschaft," which comprised many communities and administrated woods, heath, and pasture land in common. This quadruple structure is also accepted by the writer of our book, including the theory that the "Markgenossenschaft" originated as voluntary peasant cooperation, rather than under feudal pressure as has recently been asserted by R. Krzymowsky and K. Kollwig (p. 16, 17).

(4) Changes occurring as to technical agricultural methods. The book deals mainly with four of them: (a) The turning of woodland into arable land. Abel sees three successive steps. From the seventh to the thirteenth centuries, population increased, man needed new land, and proceeded in clearing ground in a west-to-east direction from the Vosges mountains in Alsace to the ranges which surround Bohemia. Then, from the fourteenth to the sixteenth centuries, population decreased; accordingly people who were settled on steep banks, swampy districts, or dry land, abandoned these places and moved into more fertile districts, where, because of decreasing population, better land was obtainable. The process of converting woodland into arable land almost stopped. This second stage had already been elaborated by Abel in one of his earlier publications. In the third period, that is, since the sixteenth century, peasants cleared woodland first, then swampy land from eastern Pomerania to the originally Polish, but later Russian, province of Wolhynia. The analysis of the first period is not original with Abel; that of the third largely and that of the second completely original with the author of this book (p. 215–218). (b) The sequence as to the systems of land use. Conflict still exists between two theories. Followers of German Romanticism asserted that tribes of Nordic origin, after having settled in some Roman provinces, cultivated land in the form of the three-fallow system. In contrast, the well-known German and Austrian agricultural historians, Friedrich Aereboe, Georg von Below, Alfons Dopsch, and Eberhard Gotheim, as well as the Englishman Frederic Seebohm and the American N. S. B. Gras, insisted that the tribe used wild field grass husbandry. Our author decides in favor of the latter, and approves the usually accepted sequence, *i.e.* three fallows, improved field grass, improved three fallows, rotation of crops, and finally free production, controlled only by the market situation (p. 291). (c) The sequence as to form and size of land. Here also there exists two conflicting theories: narrow strips in the beginning versus equilateral blocks which only later were partitioned into long, narrow strips. Abel accepts the latter view, but adds the elements of the Danish and

English ridges to the argument (p. 118). (d) The sequence as to the ratio between crop production and livestock raising. Abel adds some explanatory elements to the scheme, already elaborated by such men as Albrecht Thaer, Wilhelm Roscher, and Gustav Schmoller. The three steps within this scheme were: first, relatively scarce population, extensive use of land, and predominance of animal husbandry until the end of the Middle Ages; second, increase in population, greater advantage of producing crops, and use of animals primarily for manure and as beasts of burden; and finally, the use of arable land for grains used in cattle raising, a form of production said to exist only in occidental modern times (p. 295–298).

(5) The development of the specifically German village. Farm houses were clustered. Strips of land belonged to each farm, some of which were distant. According to our historians large quadrangular blocks originally belonged either to an isolated farm, or, perhaps to a hamlet. These blocks were continually being divided among the children. In this way irregular locations originated. The three-fallow economy then made it necessary to re-group various such parcels into at least three units. In each of them every farmer owned his special part, the use of which was regulated by law. Moreover, the change in the structure of the plow made it increasingly impossible for the small holder to own one. Plow associations developed, as recently described by Charles Stewart Orwin. The plow associations together with the three-fallow regulations and other factors converged to convert formerly separated farmers into a village community. The elaboration of this development, except for the plow association theory, is almost completely Abel's own work (p. 119–120).

(6) The various degrees of social interdependency. Based mainly on former investigations, the book describes the development of semi-independent copy-holders in northwestern Germany and semi-dependent tenants in southern Germany, who paid rent in kind (p. 18), but the discussion primarily concerns the manor. As already mentioned, Oppenheimer has considered the feudal estate as having originated from conquest. He also has applied this general theory to German development. In contrast, Max Weber and others have insisted on the composite explanation. Abel follows the latter explanation and mentions the following among the factors which were conducive to the dominance of the manor: the example of the "villa" in some provinces of the Roman Empire, the donation of land by the king to the members of the nobility as reward for military service, and the cession of land by peasants to feudals in time of unrest to obtain protection against enemies (p. 160–162). Moreover the author describes two special kinds of manorial development; on one hand, the eastern German development since the fifteenth century, where the feudal landlords produced cereals for the market on a large scale by making serfs of the peasants who worked the estates (p. 162–163); and on the other hand, the English "enclosures." Some authors saw a return to a pasture economy as an effect of the enclosures, while Roscher, Georg Hanssen and William James Ashley found the effect to be a shifting to improved grass farming and even crop rotation. Our author agrees with the latter, and insists upon the greater possibility of the large rural enterprise overcoming agrarian crises (p. 161–162).

(7) Agrarian crises. Abel offers a short survey of his own system based upon his detailed studies. Shifting of prices for agricultural products from a high to a low point occurred in Germany: (a) At the end of the thirteenth and early fourteenth century; (b) After the Thirty Years War, both caused by changes in population and demand; (c) At the beginning of the nineteenth century, caused by changes in techniques of production; (d) After the Franco-Prussian War of 1870, caused by increasing wheat production in the United States and decreased shipping costs; (e) After World War I, because of the same factors operating after 1870 and the appearance of new competitors such as Argentina and Australia (p. 364–372).

(8) Agrarian credit. The older theory, especially as represented by Adolf Buchenberger, divided credit into the older credit for consumption and the more recent credit for production purposes. In contrast, our author insists that the earlier forms of credits were not exclusively or even primarily for consumption. Accordingly he rejects the old theory and sets up his own. The latter runs as follows: (a) Credit used to maintain the property as it existed before an injury had occured, that is, credit in case of such an emergency as bad harvest, loss of livestock, or plundering; (b) Credit used to increase the property, with three subtypes: credit to be used to buy land when cheap; credit to improve the soil, a form of credit

not appearing prior to the end of the eighteenth century; and systematically organized credit for resettlement purposes which appeared after the end of the nineteenth century in connection with the trend to resettle uninhabited districts (p. 254–255).

(9) The laws of rural inheritance. Two essential forms exist: the partition of land among all those considered qualified to inherit; and the right of the firstborn. As to the latter, Abel accepts Sering's theory that it did not originate from pressure on the part of the feudal landlord (p. 125–132).

(10) The migration from the country to the town. In a more or less traditional way, the author surveys the well-known causes of the phenomenon as well as a history of the attempts made to stop it (p. 102–103).

(11) Political movements and attitudes toward rural life. The author, mainly referring to works of others, mentions the following groups: (a) Mercantilism. Agriculture was considered primarily from the viewpoint of increase of population (p. 20); (b) Napoleonism. The most extreme form of rural economic individualism was advocated; therefore, among other things, land parcelling was practiced among the children even where no historical precedent existed (p. 130); (c) Economic Liberalism. Emphasis was chiefly on the abolition of serfdom (p. 24); (d) Romanticism. In contrast to the former, the maintenance of the power of the landed aristocracy was favored (p. 24); (e) Socialism. First Karl Marx asserted that small enterprises automatically disappear; then Karl Kautzky insisted on revolutionizing rural workers and nationalizing the land; finally preference was given to a combination of individualism and socialism, in which small holders are expected to form cooperatives, owning engines, etc., in common (p. 27–30); (f) Nazism. Emphasis was placed upon the transferal of the unpartitioned estate to that person who was the legal heir (p. 130–134); (g) Sovietism. A shift occurred from the original ideology of land nationalization to the distribution of land (formerly belonging to large estate owners) among poor peasants, and finally to the establishment of collectivities (p. 167–168).

(12) Cooperatives. Our author, based on original sources and former investigations, explains the appearance of cooperatives after 1815 as due primarily to the fact that the old traditional rural units had disappeared (p. 69–71).

(13) Rural Collectivities. The author enumerates as the main types those based on: (a) religion, for example the Hutterites, here defined as a Zwinglian group; (b) pre-Marxian Socialism, such as, Fourieristic colonies; (c) land-nationalization, for example, Oppenheimer's theories; (d) Zionism, here considered as of primarily religious character; (e) Sovietism, mainly the artel and the Mexican ejidos, somewhat similar to the artel (p. 88–90, 124).

(14) Changes as to rural social systems after World War II. Abel, based on primary sources, deals with non-Russian Eastern Europe, which shifted from extremest absenteeism through peasantry to collectivities, and the non-Russian German Zone, where large estates were partitioned and to some extent settled with displaced persons, rural workers, and younger sons of peasants (p. 171–173, 179–184).

Peculiarities in the Agricultural Development of the United States. Our author is familiar with the official publications as well as with the pertinent writings of Andrew Boss, Wilson Gee, C. Horace Hamilton, Benjamin Horace Hibbard, David Gale Johnson, Dwight Sanderson, and T. Lynn Smith. According to Abel, the differences between Europe and America consist in this country's greater size, mobility, adaptability and specialization of the farming unit, smaller amount of work done by the farmer's wife, less willingness to join rural social or economic organizations, and finally the greater role of rural sociology and economics, including extension work, in rural life (p. 46, 84, 85, 196, 242, 310, 311). On the other hand there exist increasing trends toward anti-individualistic cooperatives and state interference (p. 315, 330, 336, 380, 400).

Conclusion. We may now come to the following judgments as to the correctness of historical assertions and the originality of the author:

Since the book is not primarily intended to be historical, but does incorporate a considerable amount of material and judgment, one might expect a number of historical mistakes. But actually only a few minor and peripheral mistakes and lack of clarity may be found. The following may be mentioned: After the careful investigations made by Markovic and Novakovich, the zadruga can no longer be considered as having its origin in the desire of the Serbs for protection against the Byzantine Empire, but rather, as protection from the Turkish tax-collecting system. The Roman

"villa" does not function as simply a model in the development of the German manor; but rather there is actually an uninterrupted continuance to the German feudal estate, as shown by the work of Paul von Roth, Max Weber, Alfons Dopsch and Michael Rostovtzeff. The Hutterites cannot be traced to Zwingli, but rather to the Anabaptists. The earlier land-nationalizers, Oppenheimer, and the Zionistic Kvutzot are not three unconnected phenomena, as it may appear here, but are rather links in a chain; Oppenheimer defined his work as largely based on the ideas of the early land nationalizers, while Palestinian collectivities are structured largely according to Oppenheimer's plans.

The originality of the author can be measured in the following way: We have enumerated 72 different statements and descriptions concerning historical phenomena as put forward by Abel. As to 47 of them, the author himself asserts that he simply is reporting. This occurs more frequently in connection with nineteenth and twentieth century phenomena. Such reports are based on primary sources or generally accepted theories. As to the 25 other statements, the nature of the author's originality is summarized as follows:

(1) Sixteen decisions, made by the author, between conflicting theories, concerned with the
  (a) Regularity of the sequence of the three stages: Hunting, shepherding, crop-raising.
  (b) Universality of original land communism.
  (c) Origin of seignorial property.
  (d) Soil exhaustion as cause of the decline of the Roman Empire.
  (e) Specifically Celtic character of the isolated farm house.
  (f) Specifically Slavic character of the circular village.
  (g) Specifically Slavic character of the mir.
  (h) Specifically Slavic character of the zadruga.
  (i) Zadruga, as caused by the Byzantine or Turkish tax system.
  (j) Rural communism of the early Germans.
  (k) Social status of the early German landowner.
  (l) Origin of the "Markgenossenschaft."
  (m) Three fallows or wild field grass system in the original German system.
  (n) Single or multiple explanation of the origin of the German manorial property.
  (o) Effects of the English enclosure on the system of land use.
  (p) Role of the feudals as to the development of the laws of rural inheritance.
(2) One new classification made by the author, concerning the types of agrarian credit appearing within the historical sequence.
(3) Two new combinations of formerly separated theoretical elements into one theory, made by the author, concerning
  (a) Ridges within larger blocks of land used as proof of non-existent German rural communism.
  (b) Ridges within larger blocks of land, used as proof of the former existence of equilateral blocks.
(4) Three amplifications of an existing theory, made by the author, by incorporating new material, concerning the
  (a) Third period in the history of turning woodland into arable land.
  (b) Sequence as to the ratio between crop production and livestock raising.
  (c) Enclosures in connection with economic crises.
(5) Three new theories, elaborated by the author, concerning the
  (a) Origin and essence of the second period within the history of turning woodland into arable land.
  (b) Development of the German village.
  (c) Sequence and causes of the agrarian crises.

Again having in mind that the author does not intend to offer a primarily agricultural history book, four things remain remarkable: the small number of mistakes; the number of important decisions, new classifications, amplifications, and original contributions; the objectivity in presenting the opposite viewpoint; and last, but not least, the perspicuity of the presentation.

NEWS NOTES AND COMMENTS

HISTORY OF AGRICULTURAL ECONOMICS

An unusual combination of circumstances has made possible a remarkable book, *The Story of Agricultural Economics in the United States, 1840–1932* by Henry C. Taylor and Anne Dewees Taylor (with foreward by Everett E. Edwards; Ames, Iowa State College Press, 1952, 1121 p., $10.00). Long-continued research projects carried on by informed, experienced, and patient researchers have been sponsored by broad-visioned organizations, and the results have been selected and evaluated by an agricultural economist who was among the earliest in the field, who has observed personally every considerable development in it, and who has been one of the leaders in that development and in systematizing the discipline.

But although this first-hand knowledge and retentive memory were brought to the work the authors have chosen to tell the story largely in the words of those who have taken significant part in the development of the subject and of the ideas back of it. Materials were brought together from wide-spaced and diverse sources. These materials were painstakingly sifted for selection and the selections have been so arranged as to portray the development of key ideas. If some of the selections seem exceeding long, the connecting text is frequently humanized by the authors' comments on those who are quoted—comments that help to make these writers breathing personalities. If some of the proportions in the book give pause they can usually be explained by accessibility of material on one hand or obscurity of detail on the other. Readers must note that the text ends with 1932, a date which the authors feel marks the line between the period of the development of a scientific discipline and the period of practical application through action programs for agriculture.

Arrangement undoubtedly raised puzzling questions. Two preliminary parts provide the historical setting. They outline the economic thinking aroused by the agricultural depression of the 1890's and sketch the early and growing work in agricultural economics in the colleges of agriculture, with pages devoted to the chief characters in this pioneer field. The other six parts cover farm management, fact gathering, marketing farm products, land economics, farm labor and farm wages, and farm finance. This enumeration cannot suggest the richness and diversity of the materials to be found in the many chapters that form these parts. Excerpts, quotations, analysis, comment, documentation, the introduction of arresting personalities as well as those who worked on in determined fashion, all illuminate the subject.

Countless persons helped in the preparation of this book as the authors make clear. Everett E. Edwards wrote the foreward and rendered signal help throughout. Norman Wall wrote the section on farm finance. Adelaide Hasse prepared the notable index through which the maximum usefulness of the volume may be gained. Materials were found in libraries here and there. Pioneers in the earlier work in agricultural economics gave valuable interviews and support. Others are mentioned in the preface which estimates at 200 the number who contributed in varying degrees to the character of the book. Historians, agricultural economists, and others who work with this definitive volume in the years to come will be grateful to the U. S. Department of Agriculture and to the Farm Foundation, Inc. who made possible the long, complicated, and gigantic task.

The authors use on the title page the suggestive line "Men-Services-Ideas." In the preface they say that their aim has been "to preserve a record of some of the major roots from which agricultural economics has grown, to trace the direction of the growth, and to honor those whose insight, integrity, and purposefulness determined both the direction and the soundness of the growth during the years between 1840 and 1932." When measuring this extraordinary volume against this avowed purpose, its readers will find that it is abundantly successful. Certainly there has been no such book in this field before and there is not likely ever to be another.—*Caroline Sherman, Washington, D. C.*

FARM AND COLLEGE IN WISCONSIN

Farm and College; The College of Agriculture of the University of Wisconsin, A History by W. H. Glover (Madison, University of Wisconsin Press, 1952, 462 p., $5.00) reviews farm progress in Wisconsin and the relation of the Experiment Station and College to the development of the modern farm. The statement in the last chapter that "Nowhere and at no time has a mass industry, which depends upon managerial judgments of tens of thousands of persons, been so well supplied with technical information or so receptive to it," is well supported by the record of progress.

The occasion for writing this volume was the centennial of the University of Wisconsin. The University had been established in a pioneer farm community but without any definite plans for direct service to farmers. The first half century passed with but little progress in developing effective working relations between farm and college. However, the stage had been set for great progress in the second half of the century.

How the first Dean bridged the gap between farm and college is an interesting story. This reviewer wishes

that the author had written a chapter on "Farmer and Editor" similar to the chapter on "The Dean of Deans." Much credit for bridging the gap is due to farmers and editors such as W. D. Hoard, the editor of *Hoard's Dairyman*, and Hiram Smith, the first farmer trustee of the University. The names of these two men occur frequently in the text and a short summary chapter about them and their associates could have been very interesting.

The author attempts the very difficult task of summarizing technical research in terms understandable by laymen. This is, of course, desirable, but some of it is difficult reading.

The author gives due credit to the short course teaching and to the extension service for taking the results of research to the farmer. Farmers recognized values in the results obtained from acting upon information and advice based upon research without necessarily understanding the technical terms of the research workers. The pioneer farmer had tried out his experience and traditions in a new environment where he had not only the problem of adjusting to a different physical environment but also the problem of adjusting to new and rapidly changing market conditions. In the end experience and tradition yielded to teaching and scientific demonstration.

Science knows no State boundaries. Work carried on in other States helped both Wisconsin farmers and the Wisconsin College of Agriculture just as work in Wisconsin helped farmers and research workers in other States. Similarly, the book being discussed is of more than local value since the story in many other States has much in common with that in Wisconsin.—*O. C. Stine, Twentieth Century Fund, Washington, D. C.*

CLOSING THE PUBLIC DOMAIN

For students of agricultural history, E. Louise Peffer's *The Closing of the Public Domain: Disposal and Reservation Policies, 1900–50* (Stanford, Stanford University Press, 1951, 372 p., $4.50) completes Benjamin Hibbard's *History of the Public Land Policies* and supplements the last chapters of Roy Robbins' *Our Landed Heritage*. Originally a Ph.D. dissertation at the University of California, it becomes a standard treatise on public land policy.

Toward the end of the last century, a tug of war developed between those who wished to dispose of the remainder of the public domain to private individuals and those who wished to retain much of it in federal ownership for the use of the nation. Miss Peffer's study deals with this tug of war in this century. Noting that in general the West favored disposal and the East reservation, she traces the struggle to establish forest reserves from the passage of the Forest Reserve Act of 1891 through the withdrawals and controversies of Teddy Roosevelt's administration. The conservation movement, she points out, culminated in 1920 in the passage of legislation providing for the leasing of water-power sites and non-metallic mineral lands, but failed to provide for the leasing of grazing lands. Although the Western cattlemen favored leasing, Congress responded to those who wished to dispose of the public domain to homesteaders by enacting the Kinkaid, Enlarged Homestead, and Grazing Homestead Acts. The division in the West between the cattlemen and the conservationists on the one hand and the sheepmen and the states'-righters on the other, together with a jurisdictional feud between the Departments of Interior and Agriculture, postponed action on the leasing of grazing lands until the introduction and passage of the Taylor Grazing Act in 1934. However, when the bureau administering this act sought to increase grazing fees, the Western cattlemen joined forces with the states'-rights element under the leadership of Senator Patrick McCarran of Nevada and tried to persuade Congress to sell the grazing lands to them. Congress preferred reservation to disposal and took no action.

As this brief summary indicates, the emphasis is upon the agricultural phases of our public land history. There is no discussion here of the development of Western water resources and of the administration of forest and mineral lands after their segregation. Rather Miss Peffer is concerned with the gradual triumph of the forces favoring reservation over those favoring disposal. Since the controversy over the future of the grazing lands continued the longest, she gives more attention to it than to any other. As a result, she has written the best account of the origin, enactment, and administration of the Taylor Grazing Act in print.

Since Miss Peffer was surveying a lot of history for the first time and had few monographs to help her, she confined her research to federal documents and to periodicals of national scope and neglected State sources. That is understandable, but those who follow the trail which she has blazed will want to examine such local resources as the records of the State stockgrowers' associations and the bulletins of the State agricultural experiment stations. Such historical investigations will amplify the narrative and qualify some of her generalizations.

Not the least of the services of this book is its reminder to historians that nearly one-fourth of the United States is still owned by the Federal government, a fact recently emphasized by Marion Clawson in his comprehensive *Uncle Sam's Acres* (New York, Dodd, Mead, 1951). This suggests that in the future we shall be more concerned with the administration of the public domain than with its disposal.—*Robert G. Dunbar, Montana State College.*

IRVINE RANCH OF CALIFORNIA

Robert Glass Cleland tells in *The Irvine Ranch of Orange County, 1810–1950* (San Marino, Huntington, Library, 1952, 163 p., $3.50), briefly but competently,

not only the story of a large landed enterprise in southern California, but also the story of a remarkable accomplishment by a Scotch-Irish immigrant to the United States. The Irvine Ranch, which today consists of more than 100,000 acres in Orange County, California, has been owned by that immigrant and his descendants for three-quarters of a century. The founder, James Irvine, migrated from northern Ireland to New York in 1846, and three years later went to California. Students of the agricultural history of California no doubt will compare his career with the parallel career of a contemporary, Henry Miller, who migrated from Germany to New York in 1847, and who, in 1850, also joined the gold rush to California, where he too acquired a fortune by exploiting land.

From three Spanish-Mexican grants of land, the history of which is recorded in this volume, the Irvine Ranch was formed. Acquired through successive purchases during the 1860's by a partnership consisting of Irvine, Bixby, Flint & Co., the ranch for several years was exploited by its American owners principally as a range for sheep. In 1876 Irvine became sole owner of the ranch, and when he died, ten years later, it was in process of transition from grazing to farming. This transition was completed, and the ranch was brought to its present condition, under the supervision of James Irvine, Jr., who, as early as 1894, incorporated his holdings as The Irvine Company. Of this company he was president until his death in 1947, when he was succeeded by his son Myford.

Under a system of leases, the ranch by the middle 1890's was producing large quantities of barley and beans, as it still is. For many years it has also produced walnuts and sugar beets in considerable quantities, but its most profitable enterprise today is the production of citrus fruits. Within the present century the increasing need for water has led the company to construct large storage dams on its ranch.

To Myford Irvine, the present head of The Irvine Company, belongs the responsibility of directing the latest development on the Irvine Ranch, that of its ocean frontage; and to him also belongs the major responsibility of managing The James Irvine Foundation, an institution created by his father in 1937 for the purpose of sharing the profits of the ranch with the public. To this foundation was assigned fifty-one per cent of the stock of The Irvine Company, and the income from this stock is used to promote various philanthropic objects.

To prepare himself for the task of writing this book, the author consulted not only the voluminous records of the Irvine Ranch, but also contemporaneous newspapers and other pertinent sources. He did not document his work, but his reputation as a careful historian is sufficient assurance of the accuracy of his writing. The book, which is adequately illustrated and attractively printed, is a creditable contribution to the local history of California.—*J. Orin Oliphant, Bucknell University.*

AGRICULTURE IN THE MIDDLE AGES

The general history of agriculture inaugurated in 1935 by the Swiss agriculturist Emile Savoy has been continued by Roger Grand and Raymond Delatouche in a volume entitled *L'Agriculture au Moyen Age de la fin de l'Empire Romain au XVIème siècle* (Paris, E. de Boccard, 1950, 740 p.). The book comprises the third volume of the series called *L'Agriculture à travers les âges*. The first two volumes, written by Savoy, dealt with economic and social generalities and with antiquity. Four additional volumes are planned.

The authors of the volume on the Middle Ages have made two important modifications in the original plan: they have abandoned the method of Savoy, which was more sociological than historical, and they have returned to the traditional divisions of man, land, way of life, and technology. They have considerably reduced the geographic area covered, restricting themselves to western Europe and more particularly to France.

The restricted point of view enables the authors to enter much more into detail than did Savoy. Technology in particular takes up 400 pages: cultural practices, plants cultivated, types of land, forage and the different types of livestock, and so on. The volume is characterized by its concreteness. At the risk of appearing too learned for practical men and too superficial for historians, the authors have attempted a synthesis of the two points of view.—*Louis Hedin, Rouen, France.*

CALIFORNIA FARM ORGANIZATIONS

Monographic material on the history of the agriculture of the West Coast is limited. Thus the agricultural historian will welcome Clarke A. Chambers' *California Farm Organizations; A Historical Study of the Grange, the Farm Bureau and the Associated Farmers, 1929–1941* (Berkeley, University of California Press, 1952, 277 p., $3.75). Because California agriculture differs markedly from agriculture in other areas, California farm organizations are atypical of farm organizations in other parts of the country. These organizations are strong and aggressive and are closely related to actual day-by-day problems in farm production. The student of farm labor problems will welcome the dispassionate study of this problem in Mr. Chambers' volume.

FARM WORKERS IN INDIA AND PAKISTAN

A recent study by Surenda J. Patel, *Agricultural Labourers in Modern India and Pakistan* (Bombay 1, India, Current Book House, 1952, 169 p.), prepared as a doctoral dissertation at the University of Pennsylvania, is of interest to the student of the agricultural history of India and Pakistan. The aim of the author

is to outline and analyze the evolution of landless agricultural laborers as a class. Such a class was almost non-existent in pre-nineteenth century India; at present it is the most numerous class. The author points out that in 1931 approximately 79 million persons, more than 70 percent of the agricultural population, had no rights in the land. Nearly two-fifths of the agricultural population was composed of landless agricultural laborers without even the security of the sharecropper or tenant-at-will.

HISTORY FOR HIGH SCHOOLS

A new Oxford Social Studies Pamphlet by Robert G. Dunbar, *The Farmer and the American Way* (New York, Oxford Book Company, 1952, 90 p., $0.60), is of particular interest in view of the concern expressed recently by many professional historians regarding the content of American history courses in the nation's secondary schools. Written by an able specialist in the field of agricultural history, the pamphlet is obviously aimed at bringing about an understanding of "how we got where we are today" in the field of agriculture. The subject matter is covered in eight topical chapters, each of which is concluded with suggestions for further investigation of the particular topic. While any historian may quibble over particular subject matter included or omitted, the same historian might well conclude that the pamphlet is a successful reply to the call for more professional work in the field of secondary education.—*Wayne D. Rasmussen.*

TENURE IN THE SOUTHEAST

Many farmers fail because their farms are too small, too poor, underequipped and inefficiently managed and operated. But, in addition, much of the insecurity on the land today is still rooted in flaws in our farm-tenure system. Although turnover among tenant operators has diminished in recent years, there are still thousands of tenant farmers who move every year to other farms—particularly in the South—because they search for better land, better returns on their labor and more equitable arrangements with landlords. As a result, these families suffer from economic hardships and physical inconveniences, fail to build up well-balanced farming programs, permanent improvements, or the required farm technology, and drain the resources of the farms they occupy. It was this situation that prompted the study 15 years ago by President Roosevelt's Committee on Farm Tenancy and led to the Bankhead-Jones Farm Tenant Act of 1937. But apparently the task of tenure improvement in American agriculture is far from completed.

The need for improvement is shown by Charles S. Mangum in his *The Legal Status of the Tenant Farmer in the Southeast* (Chapel Hill, University of North Carolina Press, 1952, 464 p., $7.50), a review and an analysis of the statutes and court decisions concerning the principal legal aspects of the relationship between the landlord and the renter of farm land in 11 States of the Southeast. These States were selected "because they offered a region which was homogeneous in farming methods and social mores." Although it is essentially a legal treatise, the economic undertones are clearly discernible.

The author has attempted and succeeded in pointing up "the phases of tenancy law which are peculiarly adapted to the problems to be met by the people of the rural areas of the States of the Southeast" and in pointing out those statutes that are unsuitable and outmoded and in need of clarification and modernization. The author reminds us, for example, that the Roosevelt Committee on Farm Tenancy "pointed out that there was little incentive under the present system of laws for a tenant to make improvements of a permanent nature" for both at civil law and, for the most part, at common law, "the tenant is not permitted to remove improvements from the leased premises at the end of the term and cannot claim compensation therefor" in the absence of a special agreement. Hence, observes the author, "a change in the law which could guarantee compensation for labor and materials used by the tenant in making improvements on the land would go a long way toward encouraging better farm management."

On the other hand, he observes that although many misunderstandings between landlord and tenant are "a result of uncertainty concerning an oral tenancy contract," he nevertheless, maintains that "the written lease is no panacea which some people believe it to be." In this respect he goes counter to the recommendation of the 1937 Committee on Farm Tenancy. He is similarly aware that the landlord's lien frequently interferes with the tenant's efforts to obtain production credit, but, says he, some "remedy is necessary for the protection of the landlord where a tenant is unreliable." A number of suggestions are advanced to ease this problem.

While few will disagree with Mr. Mangum that it is the State legislatures to which "any effort to reform the tenancy laws should be addressed primarily," it is well to remember that tenancy laws generally reflect customary leasing practices. And for this reason vigorous educational and action programs to inform and convince landlords and tenants concerning methods of improving farm leases are necessary to create an environment favorable for legislative action.

It is just such an educational and action program that the Farmers Home Administration is conducting in the field of tenure improvement. In making farm-adjustment loans to tenant-borrowers, the agency has adopted a Standard Farm Lease which incorporates features designed not only to foster equity between the landlord and tenant but also to encourage better systems of farming and farm practices. Every effort is

made to bring together the tenant-borrower, his landlord, and a Farmers Home Administration representative for discussion of the farming program to be carried out and to reach agreements on the basis of this model lease. The most important tenancy reforms suggested by the author are concretized in this lease and more than 70 percent of the Farmers Home Administration adjustment-borrowers in the South who are tenants had written leases in 1952 based largely on the agency's model form. It is true, as Mangum states, that the Farm Security Administration (the predecessor of the Farmers Home Administration) has urged its tenant borrowers and their landlords to accept model leasing agreements but that "the agency has not been successful in getting the reforms enacted into law in any of the States in the Southeast area." This, of course, points up sharply the unfinished task which lies ahead not only for the Farmers Home Administration but for other agencies and groups interested in tenure-improvement programs for American agriculture.—*Samuel Liss, Farmers Home Administration, Washington, D. C.*

L. C. GRAY, AGRICULTURAL HISTORIAN AND LAND ECONOMIST

Lewis Cecil Gray died at his home near Raleigh, North Carolina, November 18, 1952. He was born at Liberty, Missouri, December 2, 1881 and received the A.B. degree from William Jewell College in 1900. In 1908 he entered the graduate school of the University of Wisconsin where he gave major attention to agricultural economics with especial reference to the problems of southern agriculture which he approached from the historical point of view. The University of Wisconsin granted him the Ph.D. in 1911. He remained at Wisconsin as instructor until 1913, taught two years at the University of Saskatchewan, four years at the George Peabody College for Teachers, and in 1919 became chief of the Division of Land Economics in the U. S. Department of Agriculture.

L. C. Gray was a brilliant scholar and a man of action. He organized the Division of Land Economics and gave it inspiring and productive leadership. He wrote books, bulletins, and articles. His greatest published work is the *History of Agriculture in the Southern United States*, which came from the press in 1933. This work is the product of research and writing throughout a quarter of a century. While a graduate student at the University of Wisconsin, commencing in 1908, Gray started the research and writing which culminated in the publication of a 1116-page work in 1933. By 1911 enough had been done to fulfill the requirements for a doctor's thesis. With most students this would have ended the enterprise, but L. C. Gray was interested in his subject and stayed by the task. By 1919 the work was completed along the lines first planned, which related primarily to plantation agriculture. In the meantime, important works on the plantation had appeared in print which paralleled in considerable degree the Gray manuscript. Instead of laying the manuscript away and forgetting it, new plans were laid. The new plan involved the whole of southern agriculture up to 1860. It involved a fresh start and a comprehensive reworking of the source material, but since this was done in the light of the experience of previous work in the same field of research, it was far from being an entirely new enterprise. Yet there have been few men who would have stuck to such a task through so many years. The product is a permanent contribution to economic history, agricultural economics, technical agriculture, and to the social and political history of the old South. It stands as a grand monument to the memory of a great American, Lewis Cecil Gray.

With a rich historical background, Gray gave wise leadership to the development of land economics in the United States and became known internationally. He was an active member of the national conference on land utilization held in Chicago in 1931 to consider needed revision of national land policies. He served as executive secretary of the National Land Use Planning Committee and assisted in a substantial way the National Legislative and Advisory Committee on Land Use. Beginning in 1934 he served concurrently as head of the Division of Land Economics and, successively, as chief of the Land Policy Section of the AAA, then as Assistant Administrator of the Resettlement Administration. In 1937, he became Assistant Chief of the Bureau of Agricultural Economics. Broken in health as a result of overwork he retired from the Bureau in 1941. He had given a vision, an inspiration, and a dynamic to the work in land economics which last. His work continues to bear fruit.—*Henry C. Taylor, Washington, D. C.*

ACTIVITIES OF MEMBERS

James C. Bonner of the Georgia State College for Women has been on leave of absence during the fall quarter of 1952 to Emory University where he conducted a seminar on Southern agricultural history. During the week of November 11–14, 1952, he was guest lecturer at La Grange College, La Grange, Georgia.

Edward Everett Dale, professor of history at the University of Oklahoma for 38 years, retired from active service July 1, 1952. Professor Dale in his emeritus status will be available for consultation by graduate students while he pursues his personal research and writing.

Clayton S. Ellsworth is on research leave from the College of Wooster to continue work on his social history of the rural United States.

Fletcher M. Green of the University of North Carolina taught at Duke University during the summer of 1952.

Weymouth T. Jordan of Florida State University has been appointed editor of the Florida State University *Studies*.

Fulmer Mood of the University of Texas is on leave of absence for the current year. He is spending the time in California continuing his research work on the history of the frontier theory.

Harold T. Pinkett of the National Archives is the author of "Maryland as a Source of Food Supplies during the American Revolution," *Maryland Historical Magazine*, 46: 157–172 (September 1951). Mr. Pinkett has also compiled a report entitled *Records of the Office for Agricultural War Relations*, published as No. 37 of its preliminary Inventories by the National Archives.

Earle D. Ross of Iowa State College is the author of "Farm Tenancy in Iowa," *Annals of Iowa*, July 1951. Professor Ross was awarded the degree of Doctor of Humane Letters by Grinnell College at the commencement held in June 1952.

Louis Bernard Schmidt, professor emeritus of history at Iowa State College, presented lectures on American agricultural history at the annual conference of the Agricultural Extension Service at the University of Arizona in December 1952.

O. C. Stine, now with the Twentieth Century Fund, will serve as visiting professor at the University of Florida, Gainesville, during the 1953 spring semester.

Carl C. Taylor, vice president of the Society, has transferred to the Office of Foreign Agricultural Relations of the U. S. Department of Agriculture as a consultant on world land tenure and community development problems to serve the Point Four program of technical aid to underdeveloped countries.

The Western Reserve Historical Society, of which Russell H. Anderson is director, devoted the August 1952 issue of its *Historical Society News* to a description of the Society's facilities and activities. The agricultural historian will find the descriptions of museum collections and the library of particular interest.

Hugh H. Wooten of the U. S. Bureau of Agricultural Economics is the author of "The Land Valuations of Iredell County in 1800," *North Carolina Historical Review*, 29: 523–539 (October 1952), and of "Westward Migration from Iredell County, 1800–1850," *North Carolina Historical Review*, 30: 61–71 (January 1953).

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